

**RACE, GENDER AND INTELLIGENCE: A COMPARATIVE STUDY OF BLACK, WHITE
AND INDIAN STUDENTS' LAY THEORIES OF INTELLIGENCE**

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DECLARATION

I, Jacob Ngũnyi Wambũgũ hereby do declare that the work is the author's original work and that all sources have been accurately reported and acknowledged, and that this document has not previously in its entirety or in part been submitted at any university in order to obtain an academic qualification.

December 2006

J.N. Wambũgũ

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ABSTRACT

This study investigated Black, White, and Indian South African university students' lay theories of intelligence. 260 students participated in this study, with an age range of 18 - 39 years. The study, which is based on the theory of multiple intelligences, explored everyday perceptions of intelligence across race groups in a South African setting. The independent variables of interest were race/culture and gender, while overall and multiple intelligences served as dependent variables. Participants were asked to rate their own overall (general) as well as multiple intelligences. They were then asked to rate the overall as well as multiple intelligences of in-group (same race) and out-group (different race) members of both genders. There was a statistically significant race effect, with White and Indian students giving Black students lower ratings and Black students in turn giving White and Indian students lower ratings. This may be a result of historically racialized discourses that still influence everyday perceptions of the 'Other'. There was a statistically significant gender effect with females giving higher estimates to not only themselves, but also to males as well for all the multiple intelligences. It can be postulated that this may be a consequence of a population that has been sensitized to gender stereotyping, in addition to educational institutions promoting female friendly policies.

CHAPTER 1

INTRODUCTION

Background of the Study

Implicit theories (Dweck, Chiu & Hong, 1995a; Dweck, Hong & Chiu, 1993; Dweck & Leggett, 1988) have gained increasing attention in various fields of psychological research (Berg & Stenberg, 1992; Dweck, 1999; Fletcher, 1984; Goodnow, 1984; Sternberg, 1985a, 1985b). Researchers concur that one of the most exciting developments in intelligence research is linked to implicit or everyday theories of psychological constructs (Fletcher, 1984; Goodnow, 1984; Schrempp, 1996; Stenberg, 1985b).

As opposed to traditional studies dependent on experts' definitions of intelligence (explicit theories), implicit theory studies evaluate individuals' personal definitions, or implicit theories of intelligence (Lim, Plucker, & Kyuhyeok, 2002). It is postulated that, whilst explicit theories are constructions of psychologists based on data collected from people performing tasks presumed to measure intelligent functioning, implicit theories are constructions of people (lay people or psychologists) that reside in the minds of these individuals (Berg & Stenberg, 1992; Sternberg, 1985a, 1985b; Sternberg, Conway, Ketron, & Bernstein, 1981).

Sternberg (1990, in Furnham, 2001) differentiated between explicit and implicit theories by defining the former as "constructions of psychologists...that are based... or at least tested, on data collected from people performing tasks presumed to measure intellectual functioning" (p. 53), and the latter as "constructions of people (psychologists or lay people) that reside in the minds of...individuals, whether as definitions or otherwise" (p. 54). Sternberg (ibid.) asserts that differentiating between the two further informs us on how people evaluate their own and others' intelligence.

Research suggests that peoples' thoughts and actions in relation to intelligence are governed by personal definitions of intelligence and beliefs about how to advance and evaluate intelligence, which may vary from the theories developed by experts (Lim *et al.*, 2002). Practically, when individuals engage in intellectual activity — or assess the intellectual activity of others — they hardly have explicit theories in mind (ibid.). Dweck, Chiu and Hong (1995a) hold that peoples'

implicit theories about human attributes configure the way they understand and respond to human actions and outcomes. Henceforth, it is argued that implicit theories construct the meaning framework in which attributions occur (ibid.). On the other hand, implicit theories might draw upon explicit theories, thus the two might not vary much. Nevertheless, an understanding of implicit theories gives researchers insight into lay constructs of intelligence among others. Furthermore, such research provides an alternative to traditional, explicit models of cognition (Sternberg, 1987, in Lim *et al.*, 2002).

Different researchers have employed different theoretical orientations in the study of implicit theories of intelligence. Nonetheless, in such an endeavour it is *sine qua non* to have a particular conceptualisation of intelligence. Intelligence has been conceptualised in various ways but the most common are the idea of a general intelligence and that of multiple intelligences. In this study, intelligence was regarded as a multiplicity of intelligences as opposed to the traditional perception that regards intelligence as comprising of one general factor. Gardner's (1983) theory of multiple intelligences was employed in an analysis of the kind of implicit theories that South African university youth utilize.

Gardner (1983) suggested that individuals use different cognitive processes when engaged in tasks involving numerical, pictorial, linguistic, gestural, and other forms of symbolic systems. However, traditionally intelligence has been formally conceptualised as comprised of one general factor that underlies all adaptive behaviour (Brand, 1996; Jensen, 1998; Spearman, 1904). According to this view, intelligence is a singular, collective ability to act and react in an ever-changing world. This understanding of intelligence assumes that our ability to learn and do things comes out of a uniform cognitive capacity commonly known as the 'g' factor or general intelligence. Gardner on the other hand argues that the human mind is modular in design and that separate and autonomous cognitive processes seem to inspire performance on intellectual tasks (Gardner, 1983). Accordingly, Gardner (ibid.) implies the existence of several intelligences.

Gardner (1983) suggests that there are seven intelligences: linguistic, logical-mathematical, spatial, bodily-kinetic, musical, inter-personal and intra-personal. He argues that the traditional conceptualisation of intelligence does not accommodate the multitude of intelligences that exist in various cultures, for example navigating by means of stars or even the ability to master a foreign language. Each culture, he maintains, affords those within it different physical environments, different patterns of experience and different opportunities to develop and demonstrate skills

(ibid.). As a result, perceptions of intelligence vary from culture to culture with some, like western cultures, valuing logical reasoning, whereas African cultures tend to value good listening and spatial manoeuvre (ibid.). However, in as much as there are existent racial/ cultural differences in perceptions of intelligence, there also are prevalent gender disparities in implicit perceptions of what intelligence is.

Studies indicate that differences in perception of intelligence also persist between genders. Literature on gender differences in estimated ability, points to a consistent self-enhancing bias in men and a self-degrading bias in women (Beyer, 1990, 1998, 1999; Furnham *et al.*, 2001). In Bennett's study (1996), males tended to estimate their intelligences higher than females did. When asked to rate their parents' intelligence, both males and females rated their fathers' intelligence higher than their mothers'. From these findings, Furnham *et al.* (2001) have argued that the phenomenon witnessed arises from male hubris — over confidence in one's abilities and female humility — downplaying one's abilities.

In another study by Furnham, Clark, and Bailey (1999), when male and female participants were asked to rate themselves on the seven types of intelligence (linguistic, spatial, musical, logical-mathematical, bodily-kinetic, intra-personal, and inter-personal) as defined by Gardner (1983), the male participants showed higher ratings than the female participants did in logical-mathematical and spatial intelligence. This, it has been postulated, arises from the fact that logical-mathematical and spatial intelligences have been always been regarded as the mainstay of intelligence and as something that males possess in abundance (Furnham, 1999). Such differences in perceptions of intelligence are also evident across cultures, or as we shall see, across race groups.

Cross-cultural studies on implicit theories of intelligence show that what constitutes intelligence varies across cultures, with salient disparities between western and non-western cultures (e.g. African and Asian) (Dasen, 1984; Keats, 2000; Putman & Kilbride, 1980; Ruzgis & Grigorenko, 1994; Wober, 1972, 1974; Yang & Sternberg, 1997a, b). Non-western cultures have been found to favour social competence as essential to what constitutes intelligence, whereas western cultures tend to emphasize logical-mathematical abilities (Dasen, 1984; Keats, 2000; Putman & Kilbride, 1980; Ruzgis & Grigorenko, 1994; Wober, 1972, 1974; Yang & Sternberg, 1997a, b). It is postulated that this difference can be linked to different perceptions of the self-espoused by the mentioned cultures (ibid.).

Some psychologists have argued that the self in western cultures is seen as independent and autonomous of other individuals (Cooper & Denner, 1998; Markus & Kitayama, 1991). The emphasis is on attending to the self and discovering and expressing unique inner attributes (Markus & Kitayama, 1991). In contrast, many African and Asian cultures regard the self as interconnected with other selves that surround it (ibid.). Emphasis is on attending to others, fitting in, and maintaining harmonious interdependence with others (ibid.). Consequently, it seems that perceptions of intelligence and even the very definitions of what intelligence is are influenced by belief systems found in different cultural/race groups. As such, it is expected that European individuals will espouse notions of intelligence as constructed by their specific cultural value cum belief system and the same goes for African and Asian individuals. Nonetheless, a look at literature on race and intelligence indicates that explanations of how these cultural belief systems inform perceptions of intelligence have been ignored, culminating into racial stereotyping.

Historically and even currently, the non-European is expected to submit to the discourses and narratives of the European. The assumption has been that the more the 'Other' deviates from the Eurocentric models of existence (which are held to be the norm — the order of things) the more *malaied* he or she is regarded to be (Fanon, 1963). In this sense, when Africans and Asians display different forms of perceiving a given phenomenon, they are regarded as lacking some crucial cognitive element. This sort of thinking has been fostered by explicit theories of intelligence emanating from the practice of IQ testing (Foster, 1993). The racist works of psychologists such as Rushton (2002) and Jensen (1995, 1998) are blatant examples of how the non-European, especially the Black individual, has been sculptured as inferior to the White individual due to the fact that he/she does not perform as well as his/her European peers in tests of cognitive functioning. Foster (1993) postulates that studies of this nature have permeated into the public domain, so much that they are ultimately regarded as everyday common sense knowledge. Consequently, when looking at implicit theories behind such a background, individuals draw upon perceptions of the 'Other' primarily based on the pre-existing notions that have already constructed that 'Other'.

Problem Statement

Literature indicates that implicit theories might draw upon explicit theories and that implicit theories do shape the manner in which we make attributions about human action and behaviour. In that vein, the nucleus of the problem under scrutiny can be posed as:

- Are explicit theories of intelligence influencing implicit theories of intelligence?
- And if so, how are these implicit theories articulated in regards to racial identity?

Research Objectives

- This study seeks to contribute to the debate on lay theories of intelligence and how they may be employed to construct and understand members of other cultural/race groups different from the actor's.
- This study seeks to influence practices around perceptions of the 'Other' especially behind a background of racist culture fostered by an apartheid past.

Research Questions

Hypotheses addressed in this study are:

- Do South African male and female university students differ in the self-estimates of the seven multiple intelligences?
H0: Male and female university students do not differ in the self-estimates of the seven intelligences.
H1: Male and female university students differ in the self-estimates of the seven intelligences.
- Do Black, Indian and White South African university students differ in the self-estimates of the seven multiple intelligences?
H0: Black, Indian and White university students do not differ in the self-estimates of the seven multiple intelligences.
H1: Black, Indian and White university students differ in the self-estimates of the seven multiple intelligences.
- Do South African male and female university students differ in how they rate the intelligences of people from other race groups?
H0: Male and female university students from the three race groups do not differ in how they rate people from other race groups.

H1: Male and female university students from the three race groups differ in how they rate people from other race groups.

- Do Black, Indian and White South African university students differ in how they rate the intelligences of people from other race groups?

H0: Black, Indian and White university students do not differ in how they rate the intelligences of people from other race groups.

H1: Black, Indian and White university students differ in how they rate the intelligences of people from other race groups.

Justification for the Study

It has been postulated that implicit theories are important to the history of a field for three reasons, namely: (a) implicit theories are typically what give rise to explicit theories, (b) a lot of the history of intelligence research and practice is closely based on implicit theories than it is on formal theories, and (c) people's everyday judgments of each other's intelligence always have been and continue to be much more strongly guided by their implicit theories of intelligence than by explicit theories (Sternberg, 1990). Consequently, it can be claimed that research on implicit theories of intelligence is vital because knowing what individuals mean by "intelligence" is crucial, especially since implicit theories serve as the basis of informal, everyday assessment (job interviews), training (parent-child interactions), and behaviours (achievement-related behaviours) allied to intelligence (Dweck *et al.*, 1995a; Sternberg, 1985a, 1985b).

In addition, these theories may suggest aspects of intelligent behaviour that have previously been overlooked in available explicit theories of intelligence (Lim *et al.*, 2002). Research on implicit theories of intelligence has involved both children (Leahy & Hunt, 1983; Stipek & Gralinski, 1996) and adults (Berg & Sternberg, 1992; Lynott & Woolfolk, 1994; Mugny & Carugati, 1989). Research investigating individuals' perceptions of intelligence show that the dimensions that constitute the prototypic intelligent person differ at various stages of development and for individuals of different ages or experiential background (Berg & Sternberg, 1992).

Recent research has elucidated many issues surrounding implicit theories of intelligence, but examinations of these theories within non-American cultures are uncommon or more frequently, under-developed (Lim, Plucker & Kyuhyeok, 2002). In as much as a number of studies have been carried out in South Africa on explicit theories of intelligence (Rushton, 2002; Rushton & Skuy,

2000), little research has been done on implicit theories of intelligence. The only accessible study conducted in South Africa focussing on multiple intelligences was done by Furnham, Callahan and Akande (2004) which showed that White South African students gave themselves higher estimates for logical-mathematical, interpersonal, and intrapersonal intelligences as opposed to their Black counterparts. As such, it is interesting to research the implicit theories of young South Africans in relation to intelligence, in order to see how the three race groups view each other in regards to intelligence and stereotypes.

In a post-apartheid South Africa, a study on the implicit theories of intelligence is of great importance. It is documented that South Africa is one of the few countries in the world where racism was *de jure* — legally admissible. Moreover, looking at academic representations of race and racism in Psychology during apartheid times, Psychology did not merely display a lack of commitment to critical reflexivity, but also for the greater part engaged directly in forms of knowledge production that invariably supported stereotypical notions of race and therefore, also oppressive social relations in South Africa (Cooper, Nicholas, Seedat & Statman, 1990; Foster, 1993; Nicholas, 1993; Stevens, 2003).

Psychology in South Africa has never been apolitical (Cooper, Nicholas, Seedat & Statman, 1990). Psychology in South Africa seldom opposed, frequently accommodated and regularly aided in the development of the apartheid state (*ibid.*). It is argued that Psychology in South Africa did not prosper by simply ignoring the systematic exploitation of the marginalized people, but that it had become a part of that system (Cooper, Nicholas, Seedat & Statman, 1990; Nicholas, 1993). Seedat (1990) found that during the apartheid era psychologists ignored the negative impact of racism on the lives of Black people. In fact, psychologists in this period constructed Black South Africans as 'different', alien and negative 'Other' (Nicholas, 1993). Some research during this era was geared to the production of explicit theories of intelligence that underscored the fact that Whites were of high intelligence than Blacks and Asians (Foster, 1993). Thus, psychologists of that period reinforced key elements of the apartheid ideology.

The founding block of apartheid ideology was the veneration of whiteness and the oppression and suppression of non-whiteness. Apartheid was pre-eminently a policy designed to protect advantaged whiteness through rigorous separation of racial groups (Steyn, 2001). White South Africans latched on to European assumptions of racial and cultural superiority, of entitlement to political rule and land ownership, and of the right to benefit from their access to the world

capitalist system at the expense of an exploited, subjugated non-white majority (ibid.). Such a practice was made possible by the construction of non-Whites as deficient in comparison to Whites.

Apartheid architects tailored their nefarious propaganda along discourses of colour and cultural difference, which highlighted, foremostly, differences in intellect. Some apartheid era psychologists reproduced explicit theories that solidified such ideologies (Cooper, Nicholas, Seedat & Statman, 1990; Nicholas, 1993. Durrheim and Dixon (2000) in their study of theories of culture in racist discourse, point out that post-apartheid South Africa is still saturated by past ideologies of difference and existence. It is interesting to see how such past explicit theories might have informed implicit theories of issues such as intelligence. It is also interesting to study intelligence perceptions and racial stereotypes in a post-apartheid South Africa, given that transformation is currently taking place in all sectors of society. In light of the race conscious policies such as Affirmative Action, arguments against these policies have courted perceptions of worthiness based on merit with connotations of intellectual competence (Wambugu, 2005). In this case, there have been negative perceptions of Blacks and their intellectual abilities. This study can help in understanding how professional views on subjects such as intelligence, have filtered into the public domain. This sort of research assists in providing insights into how explicit theories of intelligence may have informed implicit theories of intelligence.

Methodology

The researcher using Gardner's (1983) theory of multiple intelligences, asked the participants in the study to fill in a questionnaire in which they had to rate themselves and members of other race groups on the seven different types of intelligence and also on overall intelligence. By adopting these seven intelligences postulated by Gardner (ibid.) the researcher was able to separate the different abilities that are claimed to makeup intelligence, thus facilitating an analysis of the emphasis placed on particular abilities related to social competence (non-western perception of intelligence) versus those linked to logical-mathematical abilities (western perception of intelligence). Gardner's theory of multiple intelligences facilitated an analysis of which types of intelligences are emphasized by males and females.

The Statistical Package for Social Sciences (SPSS) was used in the analysis of the collected data. Two types of analyses were done namely a) Multivariate analysis of Variance (MANOVA) and b)

Multiple Regression. MANOVA was used to determine differences among the means of the three race groups on the overall intelligence and Gardner's seven intelligences. MANOVA was used to see how each race group rates the target person of a particular race group. Multiple Regression was employed to determine which of the seven intelligences was the best predictor of overall intelligence.

Definition of terms

Ideology

The term ideology is employed in this study in the limited and critical sense derived from its Marxist tradition to refer to the manner in which meaning serves to create and sustain power relations of domination. In this study, the ideology of racism is held to involve particular sets of representational content and certain social practices including psychological processes which taken together offer justification for practices of inclusion or exclusion (Miles, 1989).

Race and Racism

Race has been understood to be the categorization of people on the basis of the colour of their skin. As to how many races actually exist, it is debatable. This is because it is claimed that race actually does not exist and that it is a social construction that has become reified with the passing of time (Berger & Luckman, 1967). Furthermore, arguments of superiority of one race over another primarily based on skin colour have been proved to be unfounded. All the same, Goldberg (1993) states that it is very difficult to talk in any meaningful way about issues of race in South Africa without employing the categories in virtue of which apartheid expressed itself. The divide and rule policy of the National Party government was the worst form of racism that resulted in the classification of people into nonsensical categories that continue to cause divisions even today (Ballard, 2002).

The Population Registration Act of 1950 was the original main instrument for classifying the South African population into four main groups: White, Indian, Coloured and Bantu (Ballard, 2002). People were first classified as White and Black, secondly those falling under the category of Blacks were divided into Bantu, Coloured and Indian and thirdly Bantus were further divided according to their ethnicity (ibid.). The category Bantu was meant to denote what we commonly refer to as Black people of African descent. Using apartheid taxonomy, they would be referred to

here as Black Black as opposed to Black Coloured or Black Indian. Here, this is a classification emphasized and fundamentally based on phenotype. With this in mind, the use of the terms “Indian”, “White” and “Black” in this study does not imply a fixed or biological concept of “race” but refers to the legacy of the social and political system of racial classification of apartheid that still permeates South African society.

However, it needs to be pointed out that this study is not interested in race in an essentialist manner. The main interest of this study is in the social and historical meanings that have come to be ‘deposited’ in the bodies of individuals as Whites, Indians and Blacks, to use Bourdieu’s (1972) term. It is postulated that our bodies are relatively fully socialized and as such radiate embodied knowledge (ibid.). These knowledges are ‘placed’ within our bodies by virtue of our location in time and space (ibid.). In a context rife with ideologies of racism we encounter the association of Whites with high intelligence and Blacks with less intelligence (see Flynn, 1980; Herrnstein & Murray, 1994; Jensen, 1969, 1973, 1998; Lynn, 2002; Rushton & Jensen, 2005; Rushton & Skuy, 2000).

Robert Miles (1989), in his definition of racism as an ideology, states that it is a representation of the ‘Other’ in terms of negatively evaluative content. It is regarded to be a particular discourse involving (i) specific representations of real or imagined somatic features and (ii) attributions of negatively evaluated characteristics (ibid.). Present day South Africa is still defined by its apartheid history and there are still cases of on-going racism. It seems that even in a post-apartheid era there are a number of times when individuals are judged on the basis of their phenotype features and the negative representations that come with them (Dixon & Durrheim, 2003; Wambugu, 2005).

Racial Profiling

Profiling is selecting or discriminating for or against individuals, based on easily measured characteristics that are not directly linked to the behaviour of interest, for example, when age, sex or racial appearances are used as partial proxies for criminal behaviour (Tomaskovic-Devey, Mason & Zingraff, 2004). When race is employed it is termed as racial profiling.

The term racial profiling has originally been used to refer to police organizations creating and acting on a set of characteristics, which include race, that are used to describe a typical offender or offending population (Tomaskovic-Devey, Mason & Zingraff, 2004). The Black population is

frequently singled out by law enforcers (Verniero & Zoubek, 1999). It is postulated that problems associated with racial profiling are not merely perceptions of the Black populace. Media accounts (Goldberg, 1999), and some early empirical research (Browning, Cullen, Cao, Kopache & Stevenson, 1994; Norris, Fielding, Kemp & Fielding, 1992), suggest that the targeting of Black people is quite real. In regards to this study, profiling is effected when a set of already pre-existing criteria is used to judge the intellectual abilities of a given individual. Racial stereotypes are employed towards this end.

'Other' / 'Othering'

'Othering' has been defined as a process by which individuals or social groups define who they are by discrediting or demeaning other individuals or groups (Eyben & Lovett, 2004). 'Othering' gives us a sense that we are better than 'Other' groups, who we define as "less than" us. In this study 'Othering' is seen as a way of defining and securing one's own self-interests, for example job placements, through the stigmatisation of an 'Other'. By labelling someone 'Other' people tend to stress what makes them dissimilar from or opposite to another and this carries over into the way they represent others, especially through stereotypical images.

Culture

Definitions of culture are diverse. Nonetheless, there seem to be two main views on culture; one that sees cultures as antecedent to behaviour (independent variable such as race) and the other that sees it as a process (system of transactions and meanings). The basic idea behind the former view is that any culture with its specific environment and historical background can be understood as a "maintenance system" that is antecedent to the individual (Lonner & Adamopoulos, 1997). Many of the cross-cultural approaches to culture and psychology assume openly that culture is an antecedent to human thought and behaviour (ibid.). The theoretical assumption here is that there are systems of variables that ought to be regarded as the principal determinants of human thought and behaviour. Looner and Adamopoulos (ibid.) argue that such a theoretical orientation may assume that personality traits are the key determinants of behavioural consistency. Although contextual, socio-cultural or situational variables would not necessarily be disregarded, their role would undoubtedly be considered indirect (ibid.). For example, this school of thought would hold that a pattern of prejudiced behaviour exhibited by an individual was caused by underlying dispositions.

On the other hand, the theoretical orientation of culture as a process postulates that social interaction between individuals biologically primed for culture creates culture for the group and the individuals in it (Greenfield, 1997). Thus, culture is regarded as a socially interactive process with two main component processes: the creation of shared activity (cultural practices) and the creation of shared meaning (cultural interpretation) (ibid.). Greenfield (ibid.) argues that these two components are cumulative in nature since culture is formed by processes that arise between and within generations. He adds that not only do meanings and activities amass, but they also transform over historical time (ibid.). So according to this view, the individual and the context are intertwined in the creation of culture. Thus, culture and behaviour are seen to be indistinguishable (Jahoda, 1992). As such, contextual and socio-cultural variables would be of pre-eminence in the understanding of prejudiced behaviour exhibited by an individual.

Although in this study culture has been used as an independent variable (race), main interest is fashioned along the work of Bourdieu (1977) and his notion of *habitus* and on the meanings that over a period of time, taking ideological purposes into consideration, have come to be associated with certain bodies (i.e. Black/White/Indian bodies). Bourdieu (ibid.) defines *habitus* as that aspect of cultural learning that is so deeply 'carved' within our bodies that it generates a sense of existence that describes a practical rather than a purely theoretical kind of knowledge. As such, the colour of a particular body develops meaning from a set of socio-historical relations that have 'deposited' those particular meanings on that body.

Nonetheless, there are instances in this study where culture has been employed as a process especially in the discussion of South African racist culture and Markus and Kitayama's (1991) discussion of cultural self-construals. In such cases, Edgar Schein's (1992) definition of culture was used since it encompasses most aspects from other definitions. According to him, the culture of a group is the pattern of shared basic assumptions that a specific group has learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be deemed valid and, and therefore, to be taught to new members as the proper way to perceive, think, and feel in relation to those problems (Schein, 1992).

Intelligence

It has to be pointed out that this study considers a controversial area. There is not an area in psychology that has generated as much debate, rancour and divisiveness as the topic of

intelligence. Even though intelligence and what it constitutes have been researched comprehensively both in the academic and lay communities (Furnham *et al.*, 1999; Furnham *et al.*, 2002), there is no widely accepted definition of intelligence (Gardner *et al.*, 1996; Richele, 1991). Every attempt to define it has had its critics. This is because intelligence is an entity which is not clearly visible, and cannot be easily measured. Any definition is based exclusively on the theoretical orientation and experiences of an individual who suggests it, and it is therefore bound to be criticized by those with different backgrounds, beliefs and theoretical orientations.

At the moment, there are two major schools of thought on the nature of intelligence. The one school of thought states that we only have one (g) intelligence, in that there is only one factor involved in the cognitive processing of information. The other school states that there is a multiplicity of intelligences, whereby separate and autonomous cognitive processes seem to inspire performance on intellectual tasks. This study uses Gardner's (1983) list of multiple intelligences in its analysis of lay intelligence. Gardner (1983) states that there are seven types of intelligences namely: logical-mathematical, verbal, inter-personal, intra-personal, bodily-kinetic, musical and spatial intelligences. Consequently, intelligence in this study is regarded as a multi-faceted construct.

There are times in the study when IQ is referred to. IQ is an abbreviation of Intelligence Quotient, which is a score derived from a set of standardized tests that were developed with the purpose of measuring a person's cognitive abilities ("intelligence"). Currently, IQ is calculated by estimating where, under the normal distribution curve, someone's performance on an IQ test places him/her. The curve is standardized such that the mean score is 100 and the standard deviation around the mean is 15. An average IQ is therefore between 85 and 115. The scale will go from 55 to 145 (three standard deviations below and above the mean). However, at times IQ is used to indicate intelligence.

Delimitations of the Study

- This study assumes that the seven intelligences suggested by Gardner (1983) have the same meaning across race groups, whilst the case may be that the three groups studied here have different conceptions of intelligence.

- This study used a sample of young people in a university setting within a post-apartheid South Africa. As such, generalizations are restricted to this particular population. In relation to that, this study is not suggestive, but is a statement of how these university students rated themselves and other students on gender and racial lines.
- The nature of this study is such that it is highly susceptible to social desirability. No attempt was made to conceal its aims. It is assumed that social desirability and response bias were spread across the groups.

Outline of Thesis

Chapter two offers a review of literature on intelligence and past studies on implicit theories of intelligence. It commences by highlighting the history of intelligence, followed by a discussion on theories of intelligence. This chapter focuses on the two schools of thought on the nature of intelligence. It begins by looking at the first school that holds that all intelligence comes from one general factor, a school of thought supported by psychologists such as Eysenck, Galton, Jensen, and Spearman. This is followed by a look at the proponents of the other school that believe that there is more than one general type of intelligence, or in other words, that there are different types of intelligences. It draws its support from the likes of Gardner, Sternberg, and Thurstone. Emphasis is on Gardner's multiple intelligences. This chapter also looks at previous studies that have focused on how people from different race groups/cultures and genders rate their own multiple intelligences and those of others. Then it looks at the role of culture in implicit theory formation, arguing that shared values of social groups play vital roles in individuals' cognitive, emotional and social functioning. This chapter also examines how different cultures view the self and how these construals may influence and determine the nature of individual experience, including cognition, emotion, and motivation. Finally it discusses the historical underpinnings of race and the ideology of racism in South Africa.

Chapter three examines the methodology employed in this study. This study uses a quantitative design framework. Accordingly, this chapter details the sample size of this study, the kind of sampling process used and the demographics of the sample group. It also mentions how issues of validity, reliability and ethics were dealt with, in addition to what kind of instrument was employed to obtain the necessary data and what kinds of analyses were used. Chapter four

presents the results of these analyses. The necessary tables and graphs are given to compare and contrast various race groups across a variety of variables.

In the fifth chapter, the results are discussed. From the analyses it was found that there was a difference in how the three race groups rated each other across the eight dimensions. On this account, it is argued that this phenomenon is a product of racial profiling fostered by a context that may still be informed by past explicit theories of race and intelligence. Also in the analyses it was found that females gave higher means for themselves as well as for their male colleagues for all intelligences than males did for themselves and their female counterparts. Females also gave high means in areas traditionally regarded as male domains, namely logical-mathematical, spatial and verbal intelligences. It shall be put forward that this could be as a result of females being less stereotyped than males, schooling, women friendly policies, appropriation of feminist discourses and work expectations of a capitalist age. Chapter six presents a summary of the study and suggests areas for future research.

CHAPTER 2

LITERATURE REVIEW

Up to now, how to define intelligence is still in debate. The definition of intelligence has always been academically controversial (Eysenck, 1982). However, there are two major schools of thought on its nature and properties. This chapter will look at the two opposing theories on the nature of intelligence. These two opposing theories of intelligence are (a) the general intelligence school of thought and (b) the multiple intelligences school of thought. The general intelligence proponents argue that there is one factor from which all intelligence is derived; the multiple intelligences proponents maintain that there are different kinds of intelligence.

A study, conducted by Beloff (1992) on sex differences in self-estimated intelligence in Scottish students, triggered a lot of research on that area. Similar studies have been carried out in America, Germany, Hong Kong, Iran, Japan, Singapore, South Africa, and Uganda (Bennett, 1996; Furnham, 1999, 2000; Furnham & Baguma, 1999; Furnham, Clark & Bailey, 1999; Furnham & Fong, 2000; Furnham, Hosoe & Tang, 2001; Furnham & Mkhize, 2003; Furnham, Rakow & Mak, 2002; Furnham, Shahidi & Baluch, 2002; Ramnstedt & Rammsayer, 2000). As such, this chapter will also look at some studies that have been conducted on race and gender in relation to multiple intelligences. It has been suggested that there is a consistent gender difference, with men giving higher estimated personal scores than women, with few exceptions (Furnham *et al.*, 2001). Studies on race and multiple intelligences show that different race groups deem some forms of intelligence to be relatively more important than others (Furnham *et al.*, 2001; Furnham & Baguma, 1999; Furnham & Mkhize, 2003). Finally, this chapter will discuss how such conceptualisations of intelligence are rooted in culture.

A History of Intelligence

Looking at the literature on intelligence, it stands out that intelligence as a concept was not adequately conceptualised until after Binet's endeavour to measure intelligence. As such, when looking at the history of intelligence, one is confronted with definitions of intelligence as it is understood under the practice of intelligence testing. Nonetheless, there is a wealth of literature on different definitions of the construct, and an exhaustive review here is far beyond the scope of this study. Some definitions given by psychologists include: the ability to learn, the ability to solve

problems, and adjustment-adaptation to the entire environment (Sattler, 1992). Suffice it to say, psychology as a discipline has yet to express unanimity in defining intelligence (Hilliard, 1994). Nonetheless, there have been attempts to define intelligence since the times of Plato and Aristotle.

In third-century BC Greece, intelligence was thought to be hereditary. Plato, a leading philosopher of the time, stated that a person's intellect was class-related, with the upper classes possessing the highest levels of intellect (Richardson, 1991). To maintain this status quo, individuals only reproduced with others of their own class (ibid.). A century later views had shifted. Levels of intelligence were thought to be a result of environmental exposure, that is, a product of teaching and life experience. Aristotle, often regarded as the father of psychology, suggested that intellect consists of two parts: matter (passive intellect) and form (active intellect) (Zuzne, 1957). He argued that intellect alone is immortal and eternal and that without it nothing thinks (ibid.). According to this line of thought, intelligence was due to evolution among living things and was therefore present in all citizens, but in different degrees determined by social class (Richardson, 1991).

In the Middle Ages the concept of intelligence was gravitating towards the nature theory, still with an emphasis on a class system (Richardson, 1991). Due to the shift toward the schooling of certain individuals (primarily from the upper class), relationships were constantly made between intelligence and performance in particular taught subjects, such as music and grammar (ibid.). By the end of the 1800s there was great interest in whether animals other than humans could be considered intelligent (Richardson, 1991). The most common general criterion used was the ability to show behaviour based on conceptual or abstract thinking rather than just simple instincts (ibid.). More specific criteria also included ability to use tools, plan actions, use language, solve logical problems and do arithmetic (ibid.).

In 1855, Herbert Spencer suggested that intelligence was biologically rooted, and that internal order (biological traits) was related to external order (behavioural traits) (Richardson, 1991). This means that intelligence is transmitted from parents to progeny, to the extent that mental oddness produced by habit gradually become hereditary over a number of generations (ibid.). The publication of Darwin's book titled *Origin of Species by Means of Natural Selection* in 1859, led to a great support for the hereditary view of intelligence. The theory of natural selection was employed to bolster the idea of differences in intelligence between nations, races, classes and individuals, and this was in turn used to justify slavery and oppression (ibid.). Nonetheless, it was

at this point in time that new theories on the nature of intelligence begun to arise, the most notable being Charles Spearman's.

Charles Spearman (1904) suggested that there might be a general intelligence factor (usually called *g*) associated with all intellectual tasks. Its nature was never very clear, but it was thought that its value could be inferred from performance on puzzles involving numbers, words and pictures. By the 1980s, however, there was increasing emphasis on the idea that different types of human tasks require different types of intelligence. But throughout the 1900s psychologists occasionally tried to give general definitions of intelligence — initially usually in terms of learning or problem-solving capabilities; later more often in terms of adaptation to complex environments.

There are two major schools of thought on the nature of intelligence. The first school of thought finds support in the views of psychologists such as Eysenck, Galton, Jensen, and Spearman, who believed that intelligence is reducible to one general factor, known as *g*. The proponents of the second school of thought include Gardner, Sternberg, and Thurstone. These psychologists believed that there is more than one general type of intelligence or in other words, that there are different types of intelligences. Interestingly, this latter school of thought is in disagreement as to exactly how many different types of intelligences there are.

Intelligence as General (*g*) Factor

Charles Spearman argued that every different intellectual activity involves a general factor, '*g*', which shares with all other intellectual activities, and a specific factor, '*s*', which it shares with none (ibid.). General intelligence can be understood componentially as originating partly from the execution of general components in information processing behaviour (Sternberg & Gardner, 1982). Spearman (1973) states that, "cognitive events do, like those of physics, admit throughout of being reduced to a small number of definitely formulatable principles in the sense of ultimate laws" (p.341). Psychologists within this paradigm believe that intelligence can be defined by a single factor. Whether that single factor can be termed neural processing speed, or *g*, the complexities of the human mind and its processes can be condensed into a single factor, defined as intelligence.

There are some arguments to support the theory of one general type of intelligence. The first argument in support of one general type of intelligence is the fact that there is a high positive correlation between different tests of cognitive ability. Spearman (1904) administered to English schoolboys different types of tests, covering several different areas of cognitive ability. The measurements he took were firstly based on the teachers' assessments and ranking of the boys, then on the ranking of each by two of their schoolmates, and finally on each boy's ranking of himself, from a number of tests assessing his ability to discriminate weight, pitch and light (ibid.). The results showed the correlation between intelligence and sensory measures, once they were adjusted, to be 1.0 (ibid.). Though, it has to be stated that this is unusual and also interesting as it implies a perfect correlation. The second study Spearman carried out on the boys looked at their examination grades in French, English, Mathematics and Classics; he correlated them with the teachers' ranking of the boys' musical ability. After adjustment, the correlation was said to be 1.0 (ibid.). Consequently, when Spearman examined the results of these different tests, he found that there was a positive correlation between the tests for a given individual. In other words, if a certain schoolboy performed well on a test of verbal abilities, then that same person also performed well on another test of another cognitive ability.

Spearman named this positive correlation among tests the positive manifold (Spearman, 1904). This positive manifold was also called the general intelligence factor, or *g*. This is the single factor that determines the intelligence of the individual. This '*g*' factor, he argued, is genetically inherited and is used in varying degrees during each act which involves intelligent thought (Spearman, 1904). Spearman, however, saw that this underlying factor could not contain all the information which would be required mentally to do a specific task. He believed that there was an additional factor at play, which he termed the '*s*' factor (Gould, 1996). This he defined as the knowledge possessed by an individual which is specific to a particular task that is being carried out (ibid.).

Spearman's type of analysis still survives, despite the fact that many more recent attempts to repeat Spearman's studies have not provided such conclusive results (Gould, 1996). Although positive correlations have been shown to exist, they tend to be a lot lower than those found in Spearman's original study (ibid.). Nevertheless, for us, the important feature of the two-factor theory is its statement that a general factor, '*g*', enters into all our cognitive abilities and underlies all our thinking. Jensen (1997) supported the theory of one general intelligence by stating, "the positive correlation between all cognitive test items is a given, an inexorable fact of nature. The

all-positive inter item correlation matrix is not an artifact of test construction or item selection, as some test critics mistakenly believe” (p. 223).

In the 1960s, Jensen commenced widespread testing of Black and other minority-group school children, developing a series of “culturally-free” intelligence tests that could be administered in any language (Flynn, 1980). The results of that program soon led him to distinguish between two separate types of learning ability (or intelligence): Level I (associative learning) is defined as simple retention of input— the rote memorization of simple facts and skills; Level II (conceptual learning) is approximately equivalent to the attribute measured by IQ tests — which is the ability to manipulate and transform inputs or the ability to solve problems (Jensen, 1969). From statistical analyses, Jensen concluded that Level I abilities were dispersed equally among members of all races; however Level II occurred with statistically significantly greater frequency among Whites than among Blacks, he argued (Jensen, 1969; 1972).

Because of these and other study results, Jensen was certain that 80 percent of intelligence emanates from heredity, and 20 percent from the environment. Consequently, he was convinced that intelligence is primarily an inherited trait. Jensen concluded that the differences in performance on intelligence tests of American Blacks and Whites, whereby Whites as a group repeatedly scored higher than Blacks as a group at all social-class levels, was as a consequence of inherent and essentially unchangeable intellectual differences between the two races, rather than emanating from effects of poverty, discrimination, and other factors (Flynn, 1980). Jensen’s research is explicitly racist (*ibid.*). Jensen nevertheless continues to research racial and hereditary influences on intelligence (see Jensen, 1998; Rushton & Jensen, 2005). Although Jensen’s work has been questioned (see Kamin, 1974), his opinions about race and intelligence are still part and parcel of professional and lay discourse.

Implications of viewing intelligence as a single factor are that individuals who do not reflect elements of what is regarded to be the single factor of intelligence are regarded as inferior. For example, this has been the case for females who have been said to be weak at logical-mathematical intelligence, hence of a lesser intelligence than males. And like in Jensen’s case, the same has been said of non-European people who do not exhibit forms of intelligence valorised in western cultures.

Multiple Intelligences

The different proponents of one general intelligence all concur that there is a single factor that determines intelligence, whilst the proponents of multiple intelligences agree that there is more than one type of intelligence. However, the different proponents of multiple intelligences do not agree on how many different intelligences exist or, could exist. Sternberg and Gardner have their own theories of multiple intelligences: Gardner (1983) believes there are seven forms of intelligence; Sternberg (1985a) believes there are three forms of intelligences.

According to the traditional view of intelligence, it is a singular, collective ability to act and react in an ever-changing world. This understanding of intelligence assumes that our ability to learn and do things comes out of a uniform cognitive capacity commonly known as the 'g' factor or general intelligence as postulated by Spearman. However, it can also be argued that the human mind is modular in design and that separate and autonomous cognitive processes seem to inspire performance on intellectual tasks (Gardner, 1983).

Sternberg's Triarchic Theory of Intelligence

Sternberg (1985b) felt that the theories that preceded him were not incorrect, but, rather, incomplete. Sternberg proposed a theory of intelligence that distinguished three types of intelligence, which together give a full understanding of intelligence. The three components are componential, experiential, and contextual intelligence (Sternberg, 1985a).

Componential intelligence focuses on internal information processing processes underlying intelligence (Sternberg, 1985a). The primary function of this intelligence is to facilitate problem solving. However, it is comprised of three components namely metacomponent, performance component and the knowledge acquisition component. The metacomponent dictates necessary steps for planning, monitoring and the evaluation of a solution (ibid.). The knowledge acquisition component consists of steps employed in learning how to solve problems (ibid.). The performance component is linked to computations and the knowledge component for learning how to budget among other things (ibid.).

The most important aspect in experiential knowledge is a given task to be performed (Sternberg, 1985a). It is assumed that experience with a certain task will increase one's competency in a

specific area. Cognitive advancement emanates from interaction between innate and learnt behaviour. An individual is born with biological primitive abilities that are dependant on contextual influences for development (ibid.). This relates to contextual intelligence, as the individual is considered in relation to his/her culture and the broader social context (ibid.).

An Evaluation of Sternberg's Triarchic Theory of Intelligence

One reason why Sternberg's theory has received so much acclaim is that it has been verified in real-life situations. For instance, Brazilian street children can do the math that they need to know in order to run their street businesses, but they are unable to pass a math class in school (Carraher, Carraher, & Schliemann, 1985). Such evidence shows that there are two different types of logical-mathematical intelligence, an academic/classroom logical-mathematical intelligence and a contextual logical-mathematical intelligence.

It is argued that Sternberg's triarchic theory is comprehensive and has endeavoured to accommodate conflicting views of intelligence (Li, 1996). Others insist that the triarchic theory of intelligence developed by Sternberg is "...more encompassing. . . because it takes into account social and contextual factors apart from human abilities" (ibid., p. 37). His theory inspired the development of multiple intelligence theories such as Gardner's Multiple Intelligence Theory (Gardner, 1983). Sternberg's approach has been adopted by multiple intelligence theorists as evidence that intelligence is comprised of a number of abilities. Nonetheless, it has been criticized for not providing a framework on how the different components function and whether they function simultaneously or not (Gardner, 1996). Sternberg's theory however, allows us to analyse other forms of intelligence that might exist and how they are contextually influenced.

Gardner's Theory of Multiple Intelligences

Gardner (1983) suggested that individuals use different cognitive processes when engaged in tasks involving numerical, pictorial, linguistic, gestural, and other forms of symbolic systems. He proposed that individuals are capable of intellectual functioning in at least seven relatively autonomous areas, with strengths and deficits in one or two areas. He argued that the traditional methods of assessing intelligence were not sufficiently designed to allow for assessment of individuals' potentials for achievements in other tasks such as navigating the stars, mastering a foreign language, and dribbling a soccer ball (ibid.). Gardner (1983) attempted to rectify some of

the errors of earlier psychologists who “all ignore[d] biology; all fail[ed] to come to grips with the higher levels of creativity; and all [were] insensitive to the range of roles highlighted in human society” (p. 24).

Gardner (1983) argued that each culture affords those within it different physical environments, different patterns of experience and different opportunities to develop and demonstrate skills. As a result, conceptions of intelligence vary from culture to culture, with most western cultures valuing logical reasoning, and a majority of African cultures valuing good listening and spatial manoeuvre (ibid.). This is not to mean that logical reasoning is not valued in African cultures, but that contextual demands lead to particular forms of intelligences being emphasized than others. It is postulated that some cultures use more than one symbol system, leading to a task demand reflecting different permutations in content representation (Armour-Thomas & Gopaul-McNicol, 1998).

Cultural differences in cognition can be said to reside more in the situations to which particular cognitive processes are applied than in the existence of a process in one cultural group, and its absence in another (Gay & Cole, 1967). Gardner (1983) highlights the case of the Khoi and San of the Kalahari, who are able to decipher from the spoor of an antelope its size, sex, and build among other things. They exhibit a high degree of spatial intelligence not exhibited in other cultures. The same goes for the Puluwatas who are able to navigate between several islands by memorizing star motifs on the night horizon that mark the routes (ibid.). Likewise, the Maasai of Kenya are able to travel stretches of kilometres on the savannah plains for days in search of pasture and water, and yet still find their way home by employing landmarks (Armour-Thomas & Gopaul-McNicol, 1998). These observations are intriguing and highlight the contextuality of intelligence.

It is believed that the degree of generality at which cognitions are expressed in behaviour is dependent on the opportunities a given culture affords its members to access and employ its symbol systems(s) in meaningful tasks (Armour-Thomas & Gopaul-McNicol, 1998). This is supported by studies in the area of lay beliefs about intelligence, which show consistent evidence that lay people include many practical skills and even temperamental factors in their definitions of intelligence, a definition that is most probably moulded by cultural factors (Furnham *et al.*, 2002; Furnham, 2001, 2000, 1999; Furnham & Baguma, 1999; Furnham *et al.*, 1999; Furnham & Mkhize, 2003).

In this vein, Gardner and Hatch (1989) proceeded to define intelligence as the capacity to solve problems or to style products that are valued in one or more cultural settings. Gardner (1983) adds that intellectual competence should comprise a plurality of skills of problem solving. These should occur in a manner that enables the individual to resolve genuine problems or difficulties that he/she might encounter, creating where appropriate, effective products; coupled with the potential of finding or formulating problems which is an edifice for the acquisition of new knowledge (ibid.).

Gardner's (1983) theory has a very solid biological basis. By studying individuals who had speech impairment, paralysis, or other disabilities, Gardner (ibid.) was able to localize the parts of the brain that were needed to perform the physical function. He studied the brains of people with disabilities post-mortem and found that there was damage in specific areas, in comparison to those who did not have a disability. Gardner found seven different areas of the brain, and so his theory consists of seven different intelligences, each related to a specific portion of the human brain (Li, 1996).

Gardner sought to develop a theory with multiple intelligences also because he felt that psychometric tests only examined the linguistic, logical, and some aspects of spatial intelligence, whereas the other facets of intelligent behaviour such as athleticism, musical talent, and social awareness were not included (Neisser *et al.*, 1996).

Gardner (1983) first introduced the notion of multiple intelligences in the book titled *Frames of mind: The theory of multiple intelligences*. He defines multiple intelligences as our capacity to solve problems and to fashion products in a context-rich and naturalistic setting (Armstrong, 1994). Gardner maintains that there are seven intelligences: verbal, logical-mathematical, spatial, bodily-kinetic, musical, inter-personal, and intra-personal.

Verbal Intelligence

Gardner (1983) defined *verbal intelligence* as the ability to use words effectively either in writing or speaking. Gardner (ibid.) defines it as the ability to understand and use phonology (speech sounds), syntax (grammar), semantics (meaning), and pragmatics (implication in uses of language in various settings). People who exhibit strong characteristics of linguistic intelligence possess highly developed auditory and oratory skills (Armstrong, 1994). Reading, writing, abstract

reasoning, symbolic thinking, conceptual patterning, story telling, and the use of humour are some of the products of this intelligence. Linguistic intelligence is innate, as it is universal as seen in rapidly developing capacity of speech among normal individuals (ibid.).

Logical-mathematical Intelligence

Individuals demonstrate *logical-mathematical intelligence* by effectively using numbers, and reasoning well. Gardner (1983) defines it as the ability to use and appreciate abstract relations. Mathematical ability develops over time starting from exploring and ordering objects; then progressing to manipulation of objects and appreciating actions that can be performed on objects (ibid.). Finally, an individual progresses to relationships in the absence of actions (ibid.). However, the development of this intelligence is dependant on schooling (Armstrong, 1994; Hilliard, 2004). Brainstorming, logical challenges, puzzles and strategy games are favourites of those who have highly developed logical-mathematical intelligence (Armstrong, 1994). This is what we most often associate with “scientific thinking” or inductive reasoning, although deductive thought processes are employed as well. The capacity to recognize patterns, discern relationships, and work with abstract symbols is one of the mental steps required (ibid.). Most Western educational systems and standardized testing programs are based on the logical-mathematical intelligence (ibid.). Evidence to support the existence of the localization of mathematical intelligence is derived from studies of idiot savants who can perform mathematical operations in the absence of other abilities (Gardner, 1983).

Spatial Intelligence

Spatial intelligence is manifested by accurate perception of a visual-spatial field and the ability to transform the space (Armstrong, 1994). Gardner (1983) defines this intelligence as the ability to perceive visual or spatial information, to transform and modify this information, and to create visual images even without reference to an original physical stimulus. The core of this intelligence is the capacity for thinking three-dimensionally. Artists, architects and navigators demonstrate this intelligence.

Bodily-kinetic Intelligence

Bodily-kinetic intelligence is defined as the ability to make use of all parts of one's body to solve or fashion products (Gardner, 1983). Key operations linked with this intelligence are control over fine and gross motor actions, and the ability to manipulate external objects (ibid.). People exhibit bodily-kinetic intelligence by expressing ideas or feelings with their bodies, or by transforming or producing things with their hands (e.g. sculptors with stones or pieces of wood) (Armstrong, 1994). It is the capability of manipulating objects and utilizing a variety of physical skills.

Musical Intelligence

Musical intelligence is one's ability to perceive, discriminate, transform and express musical forms (Armstrong, 1994). It includes the capability of discerning pitch, rhythm, timbre, and tone (Gardner, 1983). An individual can recognize, create, reproduce, and reflect on music. However, this kind of intelligence differs across cultures (ibid.). High musical ability may require more intensive exposure (ibid.). Neuropsychological and brain studies indicate that music and language are located in different areas of the brain (ibid.).

Inter-personal Intelligence

Inter-personal intelligence encompasses the ability to perceive and note distinctions in the moods, intentions, motivations, and feelings of others (Armstrong, 1994). According to Gardner (1983), the primary feature of this intelligence is ability to recognize and make distinctions among feelings, beliefs, and intentions. It includes understanding and communicating effectively with others, both verbally and non-verbally.

Intra-personal Intelligence

Intra-personal intelligence is self-knowledge and the ability to act adaptively on the basis of that knowledge (Armstrong, 1994). In this capacity of understanding ourselves, we are able to plan and direct our lives. We are able to distance ourselves from a situation in order to assess our behaviour. This intelligence allows us to see and comprehend the larger order of things (ibid.). This type of intelligence develops from the ability to distinguish pleasure from pain and to act

upon the discrimination (Gardner, 1983). This intelligence acts as a coordinator of all the other intellectual abilities (ibid.).

Evaluation of Gardner's Theory of Multiple Intelligences

Critics of Gardner's theory of multiple intelligences argue that it lacks scientific rigour and is biased in social claims (Sternberg, 1994). Gardner has also been accused of equating talent with intellect (ibid.). Nevertheless, Gardner's theory has been complimented for being the most comprehensive intelligence theory. This is because his theory encompasses the biological, nurture and contextual perspectives. Gardner's theory also promotes gender and cultural fairness in intelligence testing, since it provides a broad definition of intelligence.

In regards to this study, Gardner's theory allows for a separation of the various abilities that constitute intelligence, which in turn facilitates an analysis of the emphasis placed on particular abilities by different cultural groups and also an analysis of which types of intelligences are emphasized by males and females.

In summary, there are two distinct schools of thought on the nature of intelligence. The proponents of one general intelligence have a theory that explains the biological reasons for intelligence. Given that they see neural processing speed as the root of intelligence, their theory has an effective causal explanation. On the other hand, the theory of one general intelligence does not encompass all intellectual abilities. In the example with the Brazilian street children, they would most likely score poorly on an intelligence test, and be labelled with a low general intelligence. However, they are intelligent enough to be able to do the entire math that they need to know for their survival. A drawback to the general intelligence school of thought is that it is heavily dependent on psychometric assessment. Consequently, it cannot take into account the vast range of different talents that people have.

Gardner's theory has a very clear causal explanation for intelligence, like the explanation of one general intelligence. Unfortunately, it is very difficult to pinpoint and confirm Gardner's hypotheses experimentally, because of the delicacy involved with the human brain (Li, 1996). Sternberg's theory does not have a biological basis to it, and that detracts from its validity. But that may also be its strength. The theory does not focus on the brain and biological functions, but on different social situations. Therefore, the theory applies to different social situations and

environments, as none of the other theories does. But, given that there still is a substantial debate about the nature of intelligence, and no one theory is accepted by all, there is still room for improvement on any given theory.

Gender and Multiple Intelligences

The topic of group differences in IQ (especially gender and race differences) has elicited considerable academic (Flynn, 1980; Lynn, 1991, 1999; Mackintosh, 1998) and popular debate (Herrnstein & Murray, 1994). In the last decade, there have been numerous studies of self-estimates of overall intelligence (Beloff, 1992; Furnham, 2001). Findings suggest a consistent gender difference, with men giving higher estimated personal scores than women with few exceptions. Furnham and others extended this research to look at gender differences in multiple intelligences as defined by Gardner (1983). Studies in this area suggested that it was particularly in spatial and logical-mathematical intelligence that these differences occurred.

A number of studies published in the last decade have looked at self-estimates of IQ. Literature on gender differences in estimated ability, indicate a consistent self-enhancing bias in men and a self-degrading bias in women (Beyer, 1990, 1998, 1999). Several studies have particularly examined gender differences in the overall estimate of one's own general (g) IQ (Beloff, 1992; Bennett, 1996). Other studies have looked at estimates of multiple intelligences rather than g (Bennett, 1996) based on Gardner's (1983) theory of multiple intelligences. Since the main concern of this study is multiple intelligences, we shall look at previous studies that have focused on gender and multiple intelligences.

In Bennett's study (1996), males tended to estimate their intelligences higher than females did. And when asked to rate their parents' IQ, both males and females rated their fathers' IQ higher than their mothers'. Consistent with Bennett's findings, when students enrolled at higher institutions in Britain and Singapore were asked to rate their intelligence, males rated their intelligence higher than females did, but when their intelligence was psychometrically measured using Raven's Test of Intelligence (Furnham & Fong, 2000), females scored higher than males.

In another study, Furnham, Clark, and Bailey (1999) asked male and female participants to rate each of the seven intelligence types identified by Gardner (1983). They reported that when their study participants were asked to rate themselves on seven types of intelligence (linguistic, spatial, musical, logical-mathematical, bodily-kinetic, intra-personal, and inter-personal) defined by

Gardner (1983), the male participants showed higher ratings than the female participants did in logical-mathematical and spatial intelligence. From these findings, it may seem that women have less confidence in their intelligence than men do. However, it has been argued that the phenomenon witnessed arises from male hubris – over confidence in one's abilities, and female humility – downplaying one's abilities (Furnham *et al.*, 2001).

More recently, Furnham (2000), in a study of parents' estimates of their own and their children's multiple intelligence types, found that fathers gave higher estimates than mothers on their own logical-mathematical and spatial intelligence. Both parents rated sons as having greater logical-mathematical, spatial, and intra-personal intelligence than daughters. In addition, it was noticed that first born sons were rated higher on all seven intelligences than second born sons, especially on verbal and logical-mathematical intelligences. However, this pattern was not applicable to the intelligence estimates of first-born versus second-born daughters, leading to the suggestion of some form of universal influence of cultural significance attached to first born sons, articulated in terms of the principle of primogeniture (*ibid.*, 2000).

When Furnham and Gasson (1998 in Furnham, 2000) asked British parents to estimate their overall intelligence and that of their children, they found that although fathers rated themselves higher than mothers, both parents rated their first-born and second-born sons higher than their daughters. The high estimates exhibited by males could be a result of societal and family environmental influences that lead to the faulty belief that males are more intelligent than women (Furnham, 2001).

Furnham (2001) reviewed the multiple intelligence studies and confirmed previous findings that fathers had higher self-estimations on logical-mathematical and spatial intelligence compared to mothers. The findings showed that for the first-born child, mothers gave higher estimations than fathers in general, and sons were rated as having higher logical-mathematical and spatial intelligence than daughters. In addition, mothers estimated their first child's spatial intelligence higher than fathers. This confirmed Furnham, Reeves and Budhani's (2002) findings which concluded that sons were rated as having higher logical-mathematical intelligence than daughters. In another study conducted by Furnham, Shahidi and Baluch (2002) on how British and Iranian people estimated their own intelligences and that of their relatives, it was found that men tended to rate their own mathematical and spatial intelligence higher than women did.

Loori (2005) in her study of intelligence preferences of American students at various universities found that males showed a slightly higher preference for logical-mathematical intelligence. However, Loori's study contradicted the findings of Furnham, Clark and Bailey (1999), which showed that males were superior to females in spatial intelligence. Her study indicated that no statistically significant difference in spatial intelligence between the two genders existed.

Previous studies have endeavoured to provide us with some explanation to the differences between the two genders in their preferences for logical-mathematical and spatial intelligences. These studies have demonstrated that gender differences are domain specific: males estimate their logical-mathematical and spatial abilities statistically significantly higher than females. Furnham (1999) proposed that logical-mathematical and spatial intelligences lie at the heart of most lay people's conception of intelligence. That is, the average lay person's concept of intelligence is male normative, in that the logical-mathematical and spatial abilities at which men are considered superior are perceived to be its essence. This might explain why males tend to give higher means in these intelligences, since they have been socialized to believe that they are better than females in these areas, considered the cornerstones of what intelligence is supposed to be. This is reiterated by Rammstedt and Rammsayer (2000), who in their study of gender differences in self-estimated intelligence and their relation to gender-role orientation, found that males and not females were directly influenced by gender-role orientation in their self-estimates of specific aspects of intelligence.

Another likely explanation is the suggestion that the educational system does not encourage females to perform better in mathematics and to major in it in their higher educational activities (; Hoover, 1998; Jawitz, Case & Tshabalala, 2000; Loori, 2005). It is argued that the discouragement becomes expounded as schooling progresses, causing females to have a less positive attitude towards mathematics (Bowd & Brady, 2003).

Others studies seem to suggest that the differences witnessed in logical-mathematical and spatial intelligences are fostered by biological differences between males and females (Benbow, Lubinski, Shea, & Eftekhari-Sanjani, 2000; Kimura, 1999a). Kimura (1999a) maintains that the effects of sex hormones on brain organization occur so early in life that from the start the environment is acting on differently wired brains in males and females. She adds that major sex differences in function seem to lie in patterns of ability rather than in overall level of intelligence. Benbow and her colleagues (2000) reported consistent sex differences in mathematical reasoning ability that favour

males. In mathematically talented adolescents, the differences were particularly pronounced at the upper end of the distribution, where males vastly outnumbered females. The same was found for the Putnam competition, a demanding mathematics examination (ibid.). Consequently, Benbow *et al.* (ibid.) postulated that these differences are not readily explained by socialization.

Another interesting finding linked to the biological underpinnings of gender differences in cognitive abilities, is that cognitive patterns may remain sensitive to hormonal changes throughout life (Hampson, 2002). Hampson (ibid.) found that women's performances at certain tasks altered during the menstrual cycle as levels of oestrogen varied. Not only were high levels of oestrogen linked to depressed spatial ability, but also to enhanced speech and manual tasks. Kimura (1999b) observed seasonal changes in spatial ability in men. They performed better in spring when testosterone levels are lower (ibid.). This has led to others postulating that these hormonal associated fluctuations in cognitive ability characterize useful evolutionary adaptations (Silverman & Philips, 1998).

Evolutionary advocates suggest that each gender became specialized and more adapted to the types of tasks they performed (Silverman & Philips, 1998). It is argued that the tasks that men performed, such as hunting and defence of territory, are characterised as spatial, silent and aggressive (ibid.). However, women interact with their children and other women of the group in the foraging of edible plants (ibid.). That is why men excel in solving mathematical tasks, are better at map reading and completing other visual-spatial tasks such as mental rotations and space relations (ibid.). Nonetheless, the link between natural hormone levels and problem solving is based on correlational data and as such questions remain regarding how hormones act on human brain systems to produce the gender differences (Kimura, 1999b).

In sum, there seem to be gender differences in perceptions of intelligence. According to previous research, it appears there is a leaning towards logical-mathematical intelligence more so in the male population, to the extent that logical-mathematical intelligence is employed as the index of intelligence. Females are said to be lacking in logical-mathematical and this, it is argued, is evidenced in the kinds of intelligences they emphasize other than logical-mathematical intelligence. As such, previous research informs one of the aims of this study, which is to see whether differences still exist in how males and females view intelligence.

Culture/Race and Multiple Intelligences

Furnham and others have researched conceptualisations of intelligence across race groups (Furnham *et al.*, 2001; Furnham & Baguma, 1999; Furnham & Mkhize, 2003). Findings from these studies indicate that conceptualisations of what constitutes intelligence vary across contexts and across race groups. However, there still have been few direct cross-cultural comparisons in this area of intelligence (Furnham & Baguma, 1999).

Studies show that some cultural groups tend to rate themselves higher than other cultural groups. In one study done by Furnham and Baguma (1999) on American, British and African participants, American participants believed themselves to be more intelligent than their British counterparts. This was evident in verbal, musical, bodily-kinetic, logical-mathematical and spatial intelligence. The British and African participants gave similar scores on logical-mathematical, spatial, musical and bodily-kinetic intelligence. The Africans and the Americans gave similar scores on logical-mathematical, spatial, musical and bodily-kinetic intelligence. Both the Africans and Americans gave similar scores on verbal intelligence. On the overall IQ, Americans rated themselves higher (IQ mean score = 114) than the British (IQ mean score = 109) and the Ugandans (IQ mean score = 110). This, it was suggested, could be a consequence of American and African hubris or British self-depreciation; or literal disparities between the three groups (*ibid.*).

Cultural differences were also exhibited in another study on American, British and Japanese individuals by Furnham and his colleagues (2001). When participants were asked to estimate their own multiple intelligence scores and those of their parents and siblings, results indicated that on musical and bodily-kinetic intelligence the Japanese rated their father higher than their mother by 2.8 IQ points on average. The Americans rated their mothers' IQ as slightly higher than that of their father by 0.8 IQ points on average. The British rated their mothers as 1.45 IQ points above their fathers. In regards to the sibling ratings, the Americans and the British rated their siblings higher than the Japanese, who in turn were rated as having a higher verbal intelligence than their brothers. However, on spatial and logical-mathematical intelligence, the Americans and British gave both siblings a higher rating than the Japanese, with brothers rated as superior to the sisters. In a recent study conducted in South Africa by Furnham and Mkhize (2003), Zulu mothers did not believe that their sons were brighter than their daughters. However, they rated their first-born and second-born sons higher in bodily-kinetic intelligence, but lower on inter-personal intelligence.

They deemed their third born daughters higher in spatial and intra-personal intelligence than their sons. Furnham and Mkhize (ibid.) postulated that Zulu women's conception of intelligence was much broader than the Western one. It included items such as temperament and knowledge (ibid.). This, it was argued, accounted for the fact that they did not rate their sons as brighter than their daughters. It is suggested that the socially and culturally mediated nature of parenting influences the estimated intelligence of the children (Furnham, 2001). However, very few studies have been conducted that primarily focus on how Black communities conceptualise intelligence in terms of Gardner's (1983) multiple intelligences. Nonetheless, there is evidence that perceptions of intelligence vary across social contexts (Serpell, 1982, 1996).

Although numerous research employing Gardner's theory of multiple intelligences has been done looking at how people from different cultures perceive intelligence, little research has focused on how people from different races perceive intelligence using Gardner's list of seven intelligences. Furnham, Callahan and Akande (2004) did however conduct a study looking at self-estimates of intelligence of Black and White South Africans and Nigerians. In their comparison of Black and White South Africans it was found that Whites gave themselves higher estimates for logical-mathematical, interpersonal, and intrapersonal intelligences. There was no significant gender effect neither was there a significant interaction effect. It would be interesting to see if there would be such disparities between Black, White and Indian university students in how they rate themselves and other race group members on Gardner's multiple intelligences.

Implicit Theories and Culture

Culture is not easily defined, nor is there a consensus among scholars. Since it is important to understand how lay perceptions of intelligence are rooted in culture, it is imperative for us to look at various definitions of culture. Culture surrounds us all. Culture is deep seated, pervasive and complex (Schein, 1992). The modern technical definition of culture, as socially patterned human thought and behaviour, was originally suggested by the nineteenth-century British anthropologist, Edward Tylor (Hatch, 1973). This definition is an open-ended list that has been extended significantly since it was first proposed. Some researchers have attempted to construct exhaustive universal lists of the content of culture as guides for further research (ibid.). Others have listed and mapped all the culture traits of specific geographic areas (ibid.).

It can be postulated that people learn culture and this is culture's essential feature (Leeds-Hurwitz & Nyce, 1986). Several qualities of human life are transmitted genetically (*ibid.*). For example, a neonate's desire for food is caused by physiological characteristics determined within the human genetic code. An adult's desire for milk and cereal in the morning, on the other hand, cannot be explained genetically; instead, it is a learned (cultural) response to morning hunger (*ibid.*). Culture, as a body of learned behaviours common to a given human society, acts somewhat like a template (i.e. it has predictable form and content), shaping behaviour and consciousness within a human society from generation to generation (*ibid.*). So culture dwells in all learned behaviour and in some shaping template or consciousness prior to behaviour (*ibid.*).

Others propose that culture involves at least three components: what people think, what they do, and the material products they produce (Bodley, 1997). As such, mental processes, beliefs, knowledge, and values are components of culture (*ibid.*). Culture also has several properties: it is shared, learned, symbolic, transmitted cross-generationally, adaptive, and integrated (*ibid.*). The shared aspect of culture means that it is a social phenomenon; idiosyncratic behaviour is not cultural. Culture is learned, not biologically inherited, and involves arbitrarily assigned, symbolic meanings (*ibid.*).

The cross-generational aspect of culture has led some anthropologists, to treat culture as a super organic entity, existing beyond its individual human carriers (Bodley, 1997). Individuals are born into and are shaped by a pre-existing culture that continues to exist after they die. Kroeber (1917) argued that the influence that particular individuals might have over culture would itself be principally determined by culture.

Since culture is learned, then it can be postulated that the culture of a group is a pattern of shared basic assumptions that a specific group has learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be deemed valid and, and therefore, to be taught to new members as the proper way to perceive, think, and feel in relation to those problems (Schein, 1992). Thus far, we see that each culture generates its own distinct approach to and experience of reality, called the worldview (Kambon, 2004). This worldview system evolves and reinforces the survival maintenance of the culture. "Culture varies with race, such that different racial groups generate different cultures peculiar to their distinct indigenous shared/collective biogenetic, geo-historical, and experiential-social realities" (*ibid.*, pp. 74-75). This is not to say that culture and race are synonymous, but that the geographical positioning of different races has

presented them with particular contexts requiring specific forms of worldviews necessary for negotiating their lived realities.

Some social psychologists agree that the shared values of social groups play vital roles in individuals' cognitive, emotional and social functioning (Cooper & Denner, 1998). Goodnow (1984) suggests that problems or tasks do not exist in a vacuum. Neither are they connected to some abstract set of principles or framework. Rather, they are bounded by a culture's definition of the problem to be solved and its definition of the right techniques of solution (*ibid.*). Accordingly, culture defines not only what its members should think or learn but also what they should ignore or treat as irrelevant. Vygotsky (1978) and Luria (1979) reiterate this point by stating that thought is an artefact of socio-cultural experience. Different environmental settings equip their inhabitants with different perceptions of issues, leading to the view that lay theories of intelligence may be relatively culture and group specific.

Since intelligence is a concept that lacks an agreed-on definition, what constitutes intelligence varies across cultures (Gardner *et al.*, 1996). Present-day intelligence experts and even lay people in the Western culture associate intelligence with academic behaviour such as verbal and problem-solving abilities. While lay people in most non-Western cultures associate intelligence with verbal abilities, they also link it to practical problem-solving, personal character, and interest in learning (*ibid.*). It has also been shown that lay African and Asian (collectivist cultures) populations believe intelligence is related to social competence as opposed to the lay White American population (individualistic culture), which primarily relates intelligence to logical-mathematical abilities (Dasen, 1984; Keats, 2000; Putman & Kilbride, 1980; Ruzgis & Grigorenko, 1994; Yang & Sternberg, 1997; Wober, 1972, 1974). Consequently, culture statistically significantly influences the perceptions of intelligence that particular groups of people hold.

Literature on cross-cultural perceptions of intelligence provides an additional motivation for the study of implicit theories of intelligence. Berry (1988, in Lim *et al.*, 2002) notes that psychologists ought to run "ecological analyses of what the cognitive demands are of living in their ecological contexts... this type of analysis would also include a search for indigenous concepts of competence and their meaning and components" (pp. 36-37). Others argue that despite increased interest in implicit theories of intelligence, it should be noted that it is difficult to talk about psychological constructs without reference to their cultural context (Dweck *et al.*, 1995b; Ruzgis & Grigorenko, 1994). In addition, studies of these theories within non-western cultures are rare

(Lim *et al.*, 2002). Nonetheless, it is appreciated that, of the studies carried out on implicit theories of intelligence, revelations on important aspects of psychological constructs, which explicit theories may overlook, have been made (*ibid.*).

Western notions about intelligence are not necessarily shared by other cultures. For example, the Western emphasis on speed of mental processing (Sternberg *et al.*, 1981) is not shared by many cultures. In fact, other cultures might be suspicious of the quality of work that is done very quickly (*ibid.*). Rather, they emphasize depth as opposed to speed of processing (*ibid.*). Yang and Sternberg (1997a), in their review of Chinese philosophical conceptions of intelligence, found that the Confucian perspective emphasizes the characteristic of benevolence and of doing what is right. As in the Western notion, the intelligent person spends a great deal of effort in learning, enjoys learning, and persists in lifelong learning with a great deal of enthusiasm (*ibid.*). The Taoist tradition, in contrast, emphasizes the importance of humility, freedom from conventional standards of judgment, and full knowledge of oneself as well as of external conditions (*ibid.*).

The differences between Eastern and Western conceptions of intelligence have extended beyond ancient times and persist even in the present day. Yang and Sternberg (1997b) studied contemporary Taiwanese Chinese conceptions of intelligence, and found five factors underlying these conceptions: (a) a general cognitive factor, like the 'g' factor in traditional Western tests; (b) inter-personal intelligence; (c) intra-personal intelligence; (d) intellectual self-assertion; and (d) intellectual self-effacement. In another study, Chen (1994) found three factors underlying Chinese conceptions of intelligence: nonverbal reasoning ability, verbal reasoning ability and rote memory. It is argued that the difference may be attributed to different subpopulations of Chinese, to differences in methodology, or differences in when the studies were conducted (Yang & Sternberg, 1997b). The factors unearthed in these two studies differ substantially from those identified in the Western people's conceptions of intelligence by Sternberg *et al.* (1981); (a) practical problem solving, (b) verbal ability, and (c) social competence.

Disparities between East and West may be as a result of differences in the kinds of skills valued by the two kinds of cultures (Srivastava & Misra, 1996). Western cultures and their schooling systems emphasize "technological intelligence" (Mundy-Castle, 1974). Western schooling also emphasizes other factors such as generalization (Goodnow, 1984), speed, (Sternberg, 1985a), minimal moves to a solution (Newell & Simon, 1972), and creative thinking (Goodnow, 1984).

Studies with Black individuals from Africa indicate that the predominant features of conceptions of intelligence in Blacks have a strong social component, despite variation in emphasis on specific qualities (Dasen, 1984; Putman & Kilbride, 1980; Ruzgis & Grigorenko, 1994; Wober, 1972, 1974). This social component comprised of qualities that facilitate and sustain pleasant and stable intergroup associations. For instance, Serpell (1982, 1996) found that social responsibilities, cooperativeness, and obedience were emphasized by Chewa adults in Zambia as important to intelligence. In Zimbabwe, the Shona word for intelligence, *ngwara*, means to be prudent and cautious, specifically in social relationships (ibid.). Among the Baoule of Burkina Faso, service to the family and community and politeness toward and respect for elders are seen as key to intelligence (Dasen, 1984). Similar emphasis on social aspects of intelligence has been found as well among other African groups — the Songhay of Mali and the Samia of Kenya (Putman & Kilbride, 1980).

Emphasis on the social aspects of intelligence is not restricted to African cultures. Notions of intelligence in many Asian cultures also emphasize qualities that are essential for harmonious group functioning (Keats, 2000; Ruzgis & Grigorenko, 1994; Yang & Sternberg, 1997a). Other studies comparing Asian and Australian people found that their conceptions differed, with Australians offering conceptions that highlighted individual cognitive abilities and related skills, whilst Asian conceptions emphasized social competence and responsibility (Keats, 2000). These studies challenge the Western trend of excluding all but cognitive components from tests of intelligence (Lim *et al.*, 2002).

However, it should be noted that neither Africans nor Asians emphasize exclusively social notions of intelligence. Despite their conceptions emphasizing more of social skills than conventional Western ideas, at the same time they recognize the importance of cognitive aspects of intelligence. In a study of the Luo (from Kenya) conceptions of intelligence (Grigorenko *et al.*, 2001), it was found that there are four distinct terms constituting intelligence among rural Luo: *rieko* (knowledge and skills), *luoro* (respect), *winjo* (comprehension of how to handle real-life problems), and *paro* (initiative), with only the first directly referring to knowledge-based skills (including but not limited to academic skills).

Other studies indicate that Western individuals may regard constructs such as intelligence as context free, as opposed to non-Western individuals (Dweck *et al.*, 1995b; Gardner, 1983) from African and Asian backgrounds. These studies have led to the belief that substantial and

statistically significant cultural differences exist in implicit theories of intelligence. Research into implicit theories of intelligence indicates that people in different communities employ different implicit theories in their definitions of intelligence. For example, the Pokot of Kenya regard intelligence as primarily made up of a social component with prime emphasis on inter-personal qualities (Armour-Thomas & Gopaul-McNicol, 1998). However, White Americans emphasize logical-mathematical and linguistic intelligences (Gardner, 1983). Consequently, it can be suggested that cultures evolve depending on the intelligence that is emphasized within those particular cultures. Thus, intelligence is not context free.

It has been argued that different cultures hold varying conceptions of what intelligence is, based on their cultural construals of the self (Markus & Kitayama 1991). Markus and Kitayama (*ibid.*), postulate that individuals in different cultures hold saliently varying construals of the self, of others, and of the interdependence of the two. These construals may influence and determine the nature of individual experience, including cognition, emotion, and motivation (*ibid.*). They suggest that there are two construals of the self: (a) the independent self and (b) the interdependent self. It is further stated that the former is a feature of individualistic cultures, whereas the latter is a characteristic of collectivistic cultures.

According to Markus and Kitayama (1991), the independent self is conceptualised as autonomous and independent of others, or even its surroundings. The normative imperative in Western culture is to attain independence from others, in an effort to discover oneself and express one's special attributes (*ibid.*). Towards this, an individual is required to construe him/herself as an individual whose behaviour is organized and made meaningful mainly through reference to one's own internal repertoire of thoughts, feelings, and action, instead of reference to the thoughts, feelings, and actions of others (*ibid.*).

On the other hand, there is the view of the self as an interdependent self, which holds that the self is interconnected with other selves in its surroundings (Markus & Kitayama, 1991). Interdependence entails regarding oneself as part of an encircling social relationship, with the realization that one's behaviour is determined, contingent on, and, to a great degree organized by what the individual regards to be the thoughts, feelings, and actions of others in the relationship (*ibid.*). The essential feature of this view is that the person is not seen as separate from his/her social context, but is more connected to and less differentiated from others (*ibid.*). This view is exemplified in most Asian cultures and is characteristic of African cultures (*ibid.*).

Markus and Kitayama (1991) insist that there are consequences of an independent or an interdependent view of the self. They state that the independent and interdependent construals of self are among the most general and overarching schemata of the individual's self-system (ibid.). Consequently, the precise organization of many self-relevant processes and their outcomes depends heavily on whether these processes are anchored in an independent construal of the self or whether they are based mainly on an interdependent construal of the self (ibid.). It seems though that both construals do emphasise verbal intelligence, since it is key in facilitating communication and interaction between members of any racial or cultural grouping.

Cognitive activity of the self is influenced and determined by the nature of the self-system (Markus & Kitayama, 1991). Those with interdependent selves are more attentive and sensitive to others than those with independent selves (ibid.). Also, among those with interdependent selves, the unit of representation of the self and other includes a relatively specific context in which the self and then others are rooted (ibid.). As a result, knowledge about individuals, be it the self or others, is not abstract and indiscriminate across contexts, but rather remains specific to the focal context (ibid.). In addition, a regard for social context and others may shape some basic, non-social cognitive activities such as categorizing and counterfactual thinking (ibid.).

Seeing that the populations involved in this study emanate from different cultural backgrounds, it can be expected that they are bound to possess varying implicit theories in their definitions of intelligence. The participants involved in this study were derived from the White, Black and Indian communities. Black and Indian communities are generally regarded to hold collectivistic worldviews of existence. Consequently, it could be that individuals from these communities may emphasize intelligences informed by collectivistic ideals. On the other hand, the White participants (although they are located in Africa) are generally believed to be governed by tenets of an individualistic culture which, it can be argued, will consign them to emphasize particular intelligences that promote the principles of an independent self. Steyn (2001) states that, the White minority in South Africa has lead and still lead lifestyles similar in many respects to Whites found in Western Europe, North America and Australasia (ibid.). Steyn adds that the self-image and expectations of White South Africans were shaped by the general contours of the European master narrative of Whiteness that served a hegemonic function that legitimated domination of 'Others'. Therefore, it is safe to assume that White South Africans have similar value systems as their White counterparts in the rest of the world.

Stereotyping and the Habitus

This study looks at the possible existence of racial profiling in South Africa. If we concur that racial profiling is the selection or discrimination for or against individuals based on characteristics that are not directly linked to the behaviour of interest, then it has to be acknowledged that stereotypes are germane to racial profiling.

Stereotypes are understood to vary across groups of people. A stereotype is a generalization about a person or group of persons (Steele, 1997). We develop stereotypes when we are unable or unwilling to obtain all of the information we would need to make fair judgments about people or situations. In the absence of the holistic picture, stereotypes more often than not allow us to fill in the blanks (ibid.). Our society habitually innocently creates and perpetuates stereotypes that eventually lead to unfair discrimination and persecution when the stereotype is unfavourable.

Durkin (1995) regards stereotypes as being based on extreme characteristics attributed to the group with usually negative values attached to that group. Liebert and Sprafkin (1988) state that a stereotype is applied whenever a group is depicted or portrayed in such a way that all its members appear to have the same characteristics, thoughts or life conditions. Negative stereotypes about various racial groups assail us every day in the mass media and 'deposit' their residue deep into our minds, sometimes without our realizing it (Lowery, Hardin & Sinclair, 2001).

Key to this discussion is Pierre Bourdieu's (1972) concept of *habitus*, which can shed light on the structuring (social and cultural) experiences that both produce and affect individual behaviour and action. *Habitus* is the principle negotiating between human consciousness/practice and objective structures. "The *habitus* is the product of the work of the inculcation and appropriation necessary in order for those products of collective history, the objective structures (e.g. of language and economy) to succeed in reproducing themselves more or less completely, in the form of durable dispositions, in the [individuals] lastingly subjected to the same conditionings, and hence placed in the same material conditions of existence" (Bourdieu, 1972, p. 85).

Habitus as such is regarded as a system of internalised structures, perceptions, conceptions and actions that can be subjectively experienced by members of the same group. According to Bourdieu (1972), individuals are in a kind of circular relation, both the product and producers of the social world. For Bourdieu, practices are firmly rooted in the social past. That is, "they are

determined by their past conditions which have produced the principle of their production” (ibid., pp. 72-73). For that reason, it can be argued that the *habitués* of present day South Africans are probably informed by past apartheid discourses and practices that discriminated people on the basis of colour. Apartheid reinforced and fuelled racial stereotypes.

When looking at racial stereotyping, we have to understand that stereotyping goes beyond the patterning of other peoples’ behaviours and actions to develop certain expectations for other peoples’ actions and prolepses for communication with them, by implying the kinds of relations we intend to project into our interactions with these other people. As such, stereotypes exude an aspect of cultural learning that is so deeply ‘carved’ within our bodies that it generates a sense of existence that describes a practical kind of knowledge (Margolis, 1998). Here we see how the body becomes a site of labelling facilitated by the meanings attached to, in this case, the colour of a body. The colour of a particular body develops meaning from a set of socio-historical relations that have ‘deposited’ those particular meanings on that body.

Skin colour is the primary morphological characteristic that has been used to separate people of “races,” and we can link a person’s skin colour with a glut of conscious and unconscious associations regarding sexual mores, religious practices, privilege, history of violence, pride, criminal history, discrimination, rhythm, housing status, and financial status. The primary assumption is that skin colour accounts for complex differences among groups of people. Skin colour is, arguably, easily discernible and at face value skin colour would seem to be a point of departure for explaining obvious differences, as the Europeans did when colonizing Africa and the Americas.

It is sardonic that as we commence the new Millennium, hoping that change will end ills such as racism that have beleaguered our society throughout past centuries, more subtle forms of racism may be infiltrating the South African society and other societies at large. Present day White society can no longer safely express the stereotypes that so many believe about non-Whites (Van Dijk, 1992). Instead, stereotypes have acquired a dispositional aspect. This becomes possible since, according to Bourdieu (1972), bodies are repositories of narratives imbued on them by producers of those very narratives. As such, certain bodies are seen as having particular dispositional tendencies. Black becomes synonymous with adjectives such as “lazy”, “stupid”, “violent”, “dirty”, *inter alia* (Wambugu, 2005). Surveys conducted in the United States of America indicate that the majority of Whites still believe that most African-Americans are less

intelligent, are more likely to use drugs, be violent and are more inclined to be violent against women (Pollock, 2004). Wambugu (2005) found that even in post-apartheid South Africa, some White people still feel that Black people are primitive, aggressive and of inferior intelligence. Consequently, it seems that there is a co-existence of both blatant and subtle forms of racism.

A look at scientific literature unveils a wealth of prejudiced research aimed primarily at Black people. Jensen hypothesized a genetic basis for Black-White IQ differences in his 1969 Harvard Educational Review article. In one of his later book titled *Bias in mental tests* (1980) he suggests that Black-White-East Asian differences in brain size and IQ are located in an evolutionary framework. Jensen (1985) for instance stated that the average differences in IQ scores between Blacks and Whites indicated a highly probable average difference in native intelligence. Jensen (ibid.) believed that this difference resulted from the Blacks' inferior genetic cognitive potential rather than historic patterns of socioeconomic and political discrimination against them. Jensen (1998) further reiterated that the Black-White differences in *g* have not narrowed. In support of this claim, he presents evidence that, while there have been gains in measures of acquired competency such as scholastic achievement, these improvements do not indicate gains in *g*. He also argues that Black-White differences in *g* seen in measures of reaction time have not narrowed and that if there was any reduction, then it was both small and potentially a function of sampling error (ibid.).

Herrnstein and Murray (1994) in their book titled *The Bell Curve: intelligence and class structure in American life* suggest a hierarchical ordering of intelligence premised on racial category. This ordering emphasises the inferior intelligence of Blacks. Herrnstein and Murray (ibid.) asserted that, because intelligence is genetically determined, it remains impervious to educational and environmental interventions.

Rushton (1995) in his book titled *Race, evolution and behaviour: a life history perspective* also argues that differences in intelligence among Asians, Blacks and Whites are not only primarily genetic but are part of a complex of racial differences that fall in a certain order. According to Rushton (1995), Whites possess superior intelligence in comparison to both Blacks and Asians. In a study conducted by Rushton (2002) in South Africa, it is stated that Black children with lighter skin average higher IQ scores. Rushton argues that mixed race children (Coloureds) in South Africa averaged 85 IQ points, intermediate to the Black African (70 IQ points) and White (100 IQ points). He further asserts that IQ scores of Blacks and Whites regress toward the averages of their

race. This is a claim that implies that parents pass on only some exceptional genes to offspring so parents with very high IQs tend to have more average children. As such, Black and White children whose parents average 115 IQ points move to different averages — Blacks toward 85 and Whites toward 100 (Rushton, 2002). The natural inference is that if IQ is primarily inherited, and Blacks have dramatically lower IQs, then the differences between the races are likely to be genetic.

Such discourses buttress pre-existing social representations of intelligence, if not inform them. However, in as much as these studies have with time been discredited, the debate around Black intellectual ability still lingers. Recently, Rushton and Jensen (2005), in an extensive review of the literature on race differences in IQ, conclude that the evidence points to a genetic component in Black-White differences in mean IQ. Jensen (1998) had earlier stated that 100 years of research have established that in the geographical distribution of intelligence, East Asians and Europeans average higher IQs than do Africans. Rushton and Jensen (2005) still assert that African Blacks have an abysmal mean IQ of 70 which is said to be 15 points lower than that of African Americans — at the borderline of mental retardation (see Figure 1).

It can be argued that, following Bakhtin (1986), such literature operates as an “utterance” that inevitably informs our understanding of the self and the other. Bakhtin (ibid.) defined the utterance as a unit of communication characterized by a change of speaking subjects. He added that utterances always elicit a response from the one to whom they are addressed, which he referred to as the responsiveness and ‘addressivity’ of utterances. Bakhtin (ibid.) also maintained that the ‘addressivity’ of utterances might be extended to a ‘third party’ or a ‘superaddressee’. “This is an infinite audience, such as a system of ideas or beliefs, an appeal to God, or *scientific knowledge, to which we appeal to justify our claims or actions*” (Mkhize, 2004, p. 64, emphasis added). For instance, psychology in South Africa did not only live in tandem with racism: it flourished during apartheid because it could be used to justify the policy of the regime in power (ibid.).

Empirical literature, of the likes of Jensen and Rushton among others, amounts to a ‘superaddressee’ and is a ‘textual utterance’ that might foster a reinforcement of lay theories of intelligence. As such, prejudiced explicit theories filter into the public domain, shaping the understanding of self and the ‘Other’ or in relation to that ‘Other’. The consequence could be a proliferation of prejudiced implicit theories.

Figure 1: Commonly Cited IQs

Commonly cited IQ figures for various groups		
Group	IQ av	Citation
Jewish Americans	113	Herrnstein & Murray (1994)
East Asians	106	Herrnstein & Murray (1994) Lynn (1991)
Whites	100	Herrnstein & Murray (1994) Lynn (1991)
Hispanics	89	Herrnstein & Murray (1994)
Native Americans	89	Lynn (1991)
African Americans	85	Herrnstein & Murray (1994) Lynn (1991)
Sub-Saharan Africans	70	Lynn (1991)

In this study, people are asked to rate other race group members as well as members of their race group on a variety of intelligences, with many of these intelligences having particular meanings attached to them that have been delegated on the basis of colour. For example, it is believed that Black people outperform White people in music and in sports. As a result, we would expect the Black body to be rated as being superior to a White or Indian body at musical and bodily-kinetic intelligences. In the same tone, according to the stereotypes, Black people are less intelligent in comparison to White people (see Flynn, 1980; Herrnstein & Murray, 1994; Montie & Fagan, 1988; Jensen, 1969, 1973, 1985, 1998; Lynn, 2002; Mackintosh, 1998; Peoples, Fagan, & Drotar, 1995; Rushton & Jensen, 2005; Rushton & Skuy, 2000). Consequently, Blacks in our study will probably receive poor ratings, especially for logical-mathematical intelligence, from the White and Indian individuals.

Conclusion

Looking at the literature on intelligence, it stands out that there remains controversy on what constitutes intelligence. There seems to be a consensus in the existence of two schools of thought on intelligence. The one states that we only have one intelligence governed by the 'g' factor, whilst the other states that there is a multiplicity of intelligences. Although none of the two has been proven to be better than the other, it can be argued that the latter school of thought has

allowed for the investigation of other forms of intelligence that might exist in non-western communities. The idea of multiple intelligences, as posited by Gardner's (1983) theory of multiple intelligences, gives researchers room to look at contextual understandings of the concept intelligence. It is believed that as contexts vary, so will conceptions of intelligence. As such, the difference in conceptions of intelligence between groups is not an index of pathological difference.

This is important especially in light of how particular definitions of what constitutes intelligence have been employed historically in the construction of particular groups of people as superior and others as inferior, thus, offering a sort of justification for the domination and oppression of these "inferior" groups. In addition, these forms of categorization of "superior" versus "inferior" groups were tailored along biological differences of colour. Thus, a particular skin colour (White) was associated with superior intelligence whilst other colours (such as Black) were associated with intellectual inferiority. It can be argued that with time skin colour has become an index of the presence or absence of particular attributes necessary for everyday existence. This is a process that actively feeds on stereotypes born out of constructions that have been reinforced overtime. Consequently, in this day and age it is probable that some form of racial profiling may occur when looking at how lay people perceive intelligence, especially in post-apartheid South Africa.

Secondly, literature suggests that any view which advocates a universal approach in the conceptualisation of intelligence is erroneous. This is because, what one group of people might consider to be a key element of what is intelligence is, might be absent in another group of people or even be deemed as unimportant altogether. However, it is such differences that lead dominant groups to evaluate the dominated groups as relatively inferior in certain cognitive abilities, when in actual fact both groups are interpreting and understanding the concept intelligence from different worldviews. As such, these two groups would be operating from different paradigms of thought and action. Markus and Kitayama (1991) indicate how different construals of self, determined by varying worldviews, might inform lay perceptions of intelligence. From their work, it is postulated that individuals in different cultures hold saliently varying construals of the self, of others, and of the interdependence of the two. It is suggested that there are two construals of self namely, the independent self (a feature of individualist cultures) and the interdependent self (a feature of collectivist cultures) (*ibid.*). Cognitive activity of the self is influenced and determined by the nature of the self-system (*ibid.*), consequently, it follows that perceptions of any cognitive activity or lack of it, are likely to be evaluated within the very self-system.

The participants in this study present the researcher with an opportunity to look at what kinds of perceptions lay people have towards individuals from other cultures/race groups. Furthermore, the use of the multiple intelligences defined by Gardner (1983) offers an avenue of focusing on what particular groups of people regard to be the cornerstones of intelligence.

CHAPTER 3

METHODOLOGY

This chapter gives details on how the researcher conducted the study. It mentions the sample size, the sampling process, the procedure by means of which the data were collected and the research instrument. This chapter also discusses the demographics of the sample, issues of ethics related to the study, issues of validity and reliability and finally, how the data were analysed.

Participants

A total of 260 participants were used for this study. 88 of them were Black, 87 White and 85 Indian (see Figure 2). Out of the 260 participants, 130 were male and 130 were female (see Figure 3). Of these, there were 45 Black males and 43 Black females; 45 White males and 42 White females; 40 Indian males and 45 Indian females. Their mean age was 22.59 (S.D. = 2.82); age range was 18-39 years of age (see Figure 4). 34 participants did not give their age details.

Figure 2: Distribution of Participants across Race Groups

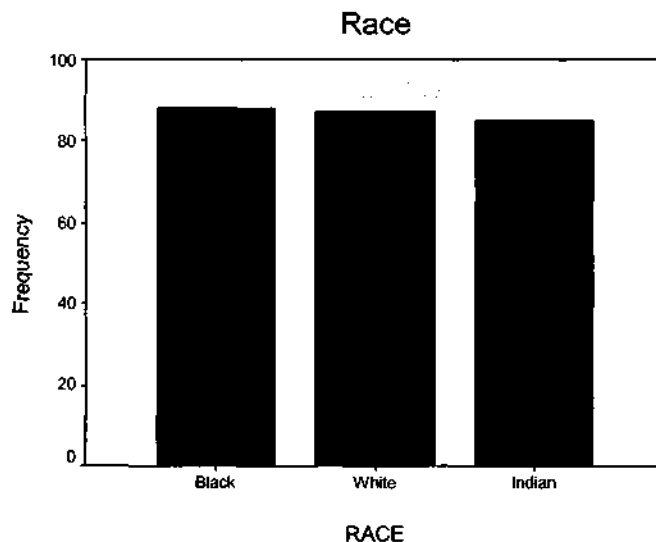


Figure 3: Distribution of Participants across Gender

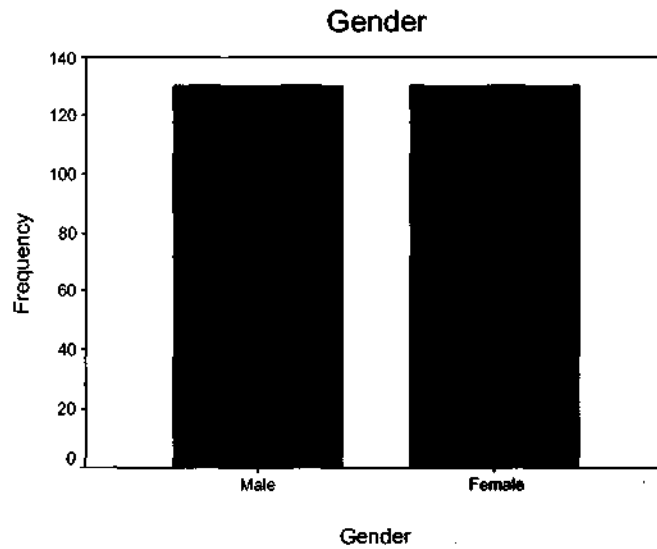
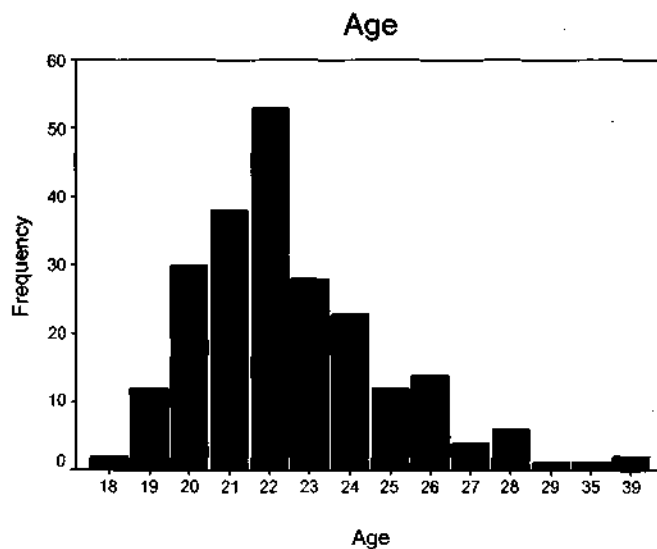


Figure 4: Age Distribution of Participants



Sampling

All the 260 participants were sampled from the University of KwaZulu-Natal. The sample was inclusive of both undergraduate and post-graduate students. Random sampling and non-random sampling techniques were employed. The data collectors sampled randomly from strategic places within the university. Places such as the university cafeteria, libraries, lawn grounds and lecture halls were visited and participants were chosen at random and asked to fill in the questionnaire.

The data collectors also randomly sampled from the various university sleeping residences. In this case, names of residence blocks were written on pieces of paper and put in a bowl. A neutral party (not involved in the study) was asked to pick from it. The data collectors then sampled from the block that was chosen, by knocking on doors with even numbers on the first block picked and selecting odd number doors for the second block picked and so forth.

Procedure

The questionnaire was administered to the participants in the precincts of the university. As already mentioned, the researcher used random sampling and non-sampling to locate the students. The participants firstly received a five-minute explanation of what the study was all about. They were informed that the study aimed to look at how lay people perceived intelligence across gender and race. They were then given a briefing on Gardner's theory of multiple intelligences and the seven intelligences were then described. Afterwards, the concept of the normal distribution of intelligences was relayed. The informed consent form (Appendix 1) was read and explained to them after which the researcher obtained their verbal consent and then they had to complete the questionnaire on their own without help or interference from another party. The task of completing the questionnaire took 15 minutes when self administered and took seven minutes when completed by the researcher. The researcher also employed a White male and an Indian female as research assistants in the collection of the data. The White male collected data from White students and the Indian researcher collected data from the Indian students.

Challenges Encountered

White and Indian individuals were sceptical of the study and hesitated or declined to fill in the questionnaire if the data collector was not from their race group. As such, for the sake of improving subject response rate, assistant researchers collected data from their own race group. Secondly, some individuals across the race groups declined to answer the questionnaire on the basis that it was prejudiced. They argued that asking one to rate another individual, let alone from another race group, was tantamount to stereotyping.

Ethics

In order to uphold the ethical principles¹ of confidentiality and anonymity, the participants were not asked to fill in their names on the questionnaire. Although they were not requested to fill in informed consent forms, the researchers took at least five minutes reading to them the informed consent form (see Appendix 1) and explaining to them the purpose of the study before they commenced the task of filling it in. This is because, during the pilot of this study, it was found that participants felt that an informed consent form was time consuming and laborious. This seemed to jeopardize their willingness in answering the actual questionnaire. To avoid losing potential participants and to maximize on time (time to fill in the questionnaire), it was decided that the researchers would instead read it and explain to potential participants the aims of the study rather than stating this information on a consent form.

It was relayed to the participants that they had the right to discontinue participating in the study at any given time without incurring negative consequences and that they had a right to refuse to participate in the study altogether. The researcher also furnished the participants with his contact details so that they could contact him for updates and for a debriefing on the study.

The study did not expose the participants to any negative consequences either directly or indirectly. The study was beneficial to the university community since it sought to highlight perceptions of South Africans on intelligence in a university setting. Hence, it had informative benefits.

The participants were assured that the principle of anonymity would be upheld. For confidentiality purposes no names were entered in the questionnaire. The only demographic markers captured being race and gender.

Once all the data had been collected, the head researcher stored it in an office at the School of Psychology, and only he had access to it.

¹ Data for this study was collected prior to the establishment of the Ethics Review Committee of the Humanities Development and Social Sciences Faculty. The Higher Degrees Committee at the School of Psychology Pietermaritzburg Campus granted ethical approval.

The Research Instrument

The data was collected using a questionnaire (see Appendix 2) based on that developed by Furnham and Gasson (1998). The questionnaire showed a normal distribution of IQ scores with means, standard deviation and descriptive labels on each of the scores. The IQ score of 85 was 'low average' and the IQ of 130 was considered as 'superior intellectual ability'. The questionnaire further had grid tables with the overall intelligence and the seven intelligence types labelled and described in eight rows. It also had seven columns. In these seven columns participants had to estimate their intellectual ability and do the same for people of other race groups.

Participants were also required to indicate their age, sex, and highest educational qualification. The questionnaire was administered in English only, based on the assumption that most university students are conversant with English, seeing that it is the language of instruction at the university.

Validation of the Instrument

The questionnaire has been used in a number of previous similar studies (Furnham, 2000; Furnham, 2001, Furnham, Hosoe & Tang, 2002) and could be regarded as a valid and reliable estimate of people's perceptions. The research instrument has been used in the South African context and proved reliable and valid for the population (Furnham & Mkhize, 2003).

For the purposes of establishing factorial validity, the ratings on the seven intelligence subtypes were subjected to a principal component analysis, which was run on the data for self-estimates. Two factors emerged which accounted for 61% of the variance. Factor 1 (Verbal) tended to yielded high loadings for verbal, interpersonal and intrapersonal intelligences. Factor 2 (Cultural) yielded high loadings for bodily-kinetic, musical and spatial intelligences. However, for the Indian students, factor 1 (Verbal) had high loadings for bodily-kinetic, interpersonal and intrapersonal intelligences and factor 2 (Cultural) had high loadings for logical-mathematical and spatial intelligences.

The factorial validity of the items in the questionnaire concurs partially with the factorial analysis done by Furnham, Kidwai and Thomas (2001). In the Furnham *et al.* (ibid.) study, three factors were found namely: factor 1 (Verbal) – with high loadings for verbal, interpersonal and

intrapersonal intelligences; factor 2 (Mathematical) – with high loadings for mathematical; factor 3 (Cultural) – with high loadings for musical intelligence. Consequently, it can be argued that the items in the questionnaire used in this study adequately cover the construct being studied (see Tables 1, 2 & 3).

The research instrument, although originally established in the Western context, is comprehensive and tries to cater for cultural differences across contexts. Nonetheless, it has to be pointed out that different race groups might not have a common understanding of the construct intelligence. The research instrument assumes that all individuals, from different race groups (and by extension different cultures) in South Africa have similar understandings of what intelligence is. Consequently, it can be postulated that the research instrument might be compromised in regards to external validity.

Table1: Factor Loadings for Black Students

Intelligences	Self Estimates	
	Verbal	Cultural
Verbal Intelligence	0.72	—
Logical-mathematical Intelligence	0.55	—
Spatial Intelligence	0.62	—
Bodily-kinetic Intelligence	0.59	0.69
Musical Intelligence	—	0.81
Interpersonal Intelligence	0.82	—
Intrapersonal Intelligence	0.79	—

Table 2: Factor Loadings for White Students

Intelligences	Self Estimates	
	Verbal	Cultural
Verbal Intelligence	0.74	—
Logical-mathematical Intelligence	0.56	—
Spatial Intelligence	0.42	—
Bodily-kinetic Intelligence	—	0.86
Musical Intelligence	—	0.50
Interpersonal Intelligence	0.83	—
Intrapersonal Intelligence	0.77	—

Table 3: Factor Loadings for Indian Students

Intelligences	Self Estimates	
	Verbal	Cultural
Verbal Intelligence	0.59	—
Logical-mathematical Intelligence	—	0.62
Spatial Intelligence	—	0.60
Bodily-kinetic Intelligence	0.80	—
Musical Intelligence	0.69	—
Interpersonal Intelligence	0.86	—
Intrapersonal Intelligence	0.76	—

Analysis

The Statistical Package for Social Sciences (SPSS) was used in the analysis of the collected data. Two types of analyses were done namely a) Multivariate analysis of Variance (MANOVA) and b) Multiple Regression. MANOVA was used to determine differences among the means of the three

race groups on the overall intelligence and Gardner's seven intelligences. The independent variables were race and gender, and the dependent variables were the stipulated eight intelligences. Probability was set at alpha 0.05 for the main effects of race and gender. However, the large number of tests computed individually for the eight intelligences increases the chances of family-wise error. In order to control for family-wise error, an α value of 0.05 was divided by the number of tests (which was eight) to give an α value of 0.01. A 3x2 factorial design was used, with the race and gender of the participants as independent variables and the multiple intelligences as dependent variables.

Multiple Regression was employed to determine which of the seven intelligences was the best predictor of overall intelligence. The dependent variable was overall intelligence with the seven intelligences entered as the independent variables. The stepwise technique of variable elimination was used to sort out the variable with the highest predictive value. An α value of 0.05 was used.

In this chapter we have looked at how the study sample was obtained and have detailed the demographical spread. Random sampling and sampling at random techniques were used at different stages of the sampling process. The sample was equally represented across the race groups and a majority of the participants were between 20 and 23 years of age. Participants gave verbal consent after they were briefed about the aims of the study. The research instrument was derived from previous studies conducted by Furnham and his colleagues. MANOVA and Multiple Regression statistical tests were used in the analyses of collected data.

- H0: Black, Indian and White university students do not differ in the self-estimates of the seven multiple intelligences.
- H1: Black, Indian and White university students differ in the self-estimates of the seven multiple intelligences.

The main effect of race was statistically significant at ($F(2,240) = 2.16, p < 0.05$). Table 4 shows the results of MANOVA on self-estimates of intelligence across the three race groups.

Table 4: Self-Estimates of Intelligence by Race

IQs	Race						F value	P value
	Black		White		Indian			
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Ov	106.78	9.03	113.11	9.69	106.56	8.50	12.99	0.00
Verb	104.20	16.84	110.52	16.04	105.44	11.40	4.68	0.01
L-Math	99.21	14.53	102.63	17.51	102.50	16.01	1.21	0.30
Spa	106.11	14.21	111.81	11.85	105.28	14.55	5.26	0.01
Mus	99.13	17.78	99.60	19.34	98.91	19.04	0.03	0.97
BK	103.61	18.84	104.57	15.00	103.59	15.10	0.09	0.91
Inter	109.42	16.19	114.85	13.95	110.43	14.63	2.90	0.06
Intra	109.88	17.24	115.44	13.22	112.19	16.05	2.52	0.08

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK= Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

Overall intelligence was statistically significant for race ($F(2,240) = 12.99, p < 0.01$). The mean score for Whites was 113.11 and that of Indians was 106.56, and that of Blacks was 106.78. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference between White and Black estimates, with a mean difference of 6.33. There was also a statistically significant difference between White and Indian estimates, with a mean difference of 6.54. However, there was no statistically significant difference between Indian and Black estimates. Whites gave higher self-estimates than did Blacks and Indians.

Verbal intelligence was statistically significant for race ($F(2,240) = 4.68, p = 0.01$). The mean score of Whites was 110.52, that of Indians was 105.44, and that of Blacks was 104.20. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference

between White and Black estimates, with a mean difference of 6.32. However, there was no statistically significant difference between Indian and Black estimates, or between White and Indian estimates. Whites gave higher self-estimates than Blacks did.

Spatial intelligence was statistically significant for race ($F(2,240) = 5.26, p = 0.01$). The mean score of Whites was 111.81, that of Indians was 105.28 and that of Blacks was 106.11. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference between White and Black estimations, with a mean difference of 5.71. There also was a difference between White and Indian estimates, with a mean difference of 6.54. There was no statistically significant difference between Black and Indian estimates. Whites gave higher self-estimates than did Blacks and Indians.

As far as self-estimates were concerned, for the main effect of race, the following multiple intelligences were not statistically significant: logical-mathematical ($F(2,240) = 1.21, p > 0.01$); musical intelligence ($F(2,240) = 0.03, p > 0.01$); bodily-kinetic intelligence ($F(2,240) = 0.09, p > 0.01$); inter-personal intelligence ($F(2,240) = 2.90, p > 0.01$); and intra-personal intelligence ($F(2,240) = 2.52, p > 0.01$).

In sum, for overall, verbal and spatial intelligence, Whites gave higher self-estimates, compared to the self-ratings given by Blacks and Indian participants.

Estimates of the Multiple Intelligences of Indian Males by the Three Race Groups

In the estimation of the multiple intelligences of Indian males by the three race groups, there were statistically significant results for race and gender. There was no interaction effect.

Estimates of the Multiple Intelligences of Indian Males: Race Effect

To commence with, the study tested the following hypotheses:

- H0: Black, Indian and White university students do not differ in how they rate the intelligences of Indian males.

- H1: Black, Indian and White university students differ in how they rate the intelligences of Indian males.

The main effect for race was statistically significant ($F(2,239) = 4.78, p < 0.05$). The intelligences that were found to have statistically significant differences were verbal, spatial, musical, bodily-kinetic, inter-personal and intra-personal intelligences (see Table 5).

Table 5: Estimated Multiple Intelligences of Indian Males by Race

IQs	Race						F value	P value
	Black		White		Indian			
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Ov	99.47	15.70	103.41	9.32	103.29	8.76	3.85	0.02
Verb	94.54	13.08	101.04	12.68	97.56	9.61	5.86	0.00
L-Math	102.48	16.97	108.14	15.35	108.57	14.06	3.98	0.02
Spa	91.80	13.15	102.95	9.29	101.60	11.00	24.03	0.00
Mus	86.81	12.79	97.19	16.40	97.59	10.99	17.18	0.00
BK	87.87	15.55	102.09	13.99	101.59	12.20	27.46	0.00
Inter	86.80	16.52	99.88	13.05	97.52	10.73	21.16	0.00
Intra	90.94	18.30	101.17	10.47	99.58	12.17	12.38	0.00

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK = Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

Verbal intelligence was statistically significant for race ($F(2,239) = 5.86, p < 0.01$). White participants' estimates of the Indian males' verbal intelligence was 101.04. Indians estimated Indian males' verbal abilities to be 97.56 on average, while Blacks gave Indian males an average of 94.54. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference between White and Black estimates, with a mean difference of 6.48. Compared to Blacks, White participants thought Indian males had higher verbal intelligence.

Spatial intelligence was statistically significant for race ($F(2,239) = 24.03, p < 0.01$). White participants gave Indian males an average mean of 102.95 for spatial intelligence, while Indians estimated Indian males to have a spatial intelligence of 101.60. Blacks estimated the spatial intelligence of Indian males to be 91.80. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference between White and Black estimates, with a

mean difference of 11.16. Whites thought Indian males had a higher spatial intelligence, compared to Blacks, whose estimates indicate they think Indian males have a lower spatial intelligence.

Musical intelligence was statistically significant for race ($F(2,239) = 17.19, p < 0.01$). White participants' estimates of the Indian males' musical intelligence was 97.19, while Indians estimated Indian males' musical intelligence to be 97.59. Blacks' estimates of Indian males' musical intelligence was 86.81. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference between White and Black estimates, with a mean difference of 10.27 and also between Indian and Black estimates with a mean difference of 10.89. Whites and Indians thought Indian males had higher musical intelligence, compared to Blacks who thought otherwise.

Bodily-kinetic intelligence was statistically significant for race ($F(2,239) = 27.46, p < 0.01$). White participants estimated Indian males' bodily-kinetic intelligence to be 102.09, whilst Indians estimated Indian males to have an intelligence of 101.59 for bodily-kinetic intelligence. Blacks estimated the bodily-kinetic intelligence of Indian males to be 87.87. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference between White and Black estimates, with a mean difference of 14.03 and also between Indian and Black estimates with a mean difference of 13.59. Whites and Indians thought Indian males had higher bodily-kinetic intelligence, compared to Blacks whose estimates suggest they think Indian males have lower bodily-kinetic intelligence.

Inter-personal intelligence was statistically significant for race ($F(2,239) = 21.16, p < 0.01$). White participants estimated Indian males' inter-personal intelligence to be 99.88 and Indians estimated Indian males to have an inter-personal intelligence of 97.52. Blacks estimated the inter-personal intelligence of Indian males to be 86.80. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference between White and Black estimates, with a mean difference of 12.97 and also between Indian and Black estimates with a mean difference of 10.52. Whites and Indians thought Indian males had higher inter-personal intelligence, compared to Blacks whose estimates suggest they think Indian males have lower inter-personal intelligence.

Intra-personal intelligence was statistically significant for race ($F(2,239) = 12.38, p < 0.01$). White participants' estimates of the Indian males' intra-personal intelligence was 97.19, while Indians estimated Indian males' intra-personal intelligence to be 97.59. Blacks gave Indian males an

average estimate of 86.81 for intra-personal intelligence. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference between White and Black estimates, with a mean difference of 10.13 and also between Indian and Black estimates with a mean difference of 8.39. Whites and Indians thought Indian males had higher musical intelligence, compared to Blacks who thought Indian males had lower intra-personal intelligence.

As far as estimates of multiple intelligences for Indian males were concerned, for the main effect of race the following intelligences were found not statistically significant: logical-mathematical intelligence ($F(2,239) = 3.98, p > 0.01$) and overall intelligence ($F(2,239) = 3.85, p > 0.01$).

In sum, White and Indian participants on one hand and Black participants on the other differed in how they rated the Indian males. Blacks gave lower scores to the Indian males in comparison to the Whites in verbal, spatial, musical, bodily-kinetic, inter-personal and intra-personal intelligences.

Estimates of Indian Males' Multiple Intelligences: Gender Effects

The study tested the following hypotheses:

- H0: Male and female university students from the three race groups do not differ in how they rate Indian males.
- H1: Male and female university students from the three race groups differ in how they rate Indian males.

The main effect for gender was statistically significant ($F(1,239) = 3.39, p < 0.05$). The only statistically significant difference was found for spatial intelligence (see Table 6).

Spatial intelligence was statistically significant for gender ($F(1,239) = 8.87, p < 0.01$). Males estimated the spatial intelligences of Indian males at 96.62, while females gave Indian males an average spatial intelligence of 100.95.

Table 6: Estimated Intelligences of Indian Males by Gender

IQs	Gender				F value	P value
	Male		Female			
	Mean	S.D.	Mean	S.D.		
Ov	101.83	13.41	102.28	10.50	0.11	0.74
Verb	98.00	13.31	97.42	10.85	0.14	0.71
L-Math	105.30	16.16	107.49	15.28	1.19	0.28
Spa	96.62	11.39	100.95	13.27	8.87	0.00
Mus	92.90	15.27	94.82	13.34	1.22	0.27
BK	97.79	15.68	96.58	15.27	0.44	0.51
Inter	96.22	13.69	93.25	15.84	2.79	0.10
Intra	99.06	14.09	95.40	15.52	4.00	0.05

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK= Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

The following intelligences were not statistically significant: overall intelligence ($F(2,239) = 3.85$, $p > 0.01$), verbal intelligence ($F(1,239) = 0.14$, $p > 0.01$); logical-mathematical intelligence ($F(1,239) = 1.19$, $p > 0.01$); musical intelligence ($F(1,239) = 1.22$, $p > 0.01$); bodily-kinetic intelligence ($F(1,239) = 0.44$, $p > 0.01$); inter-personal intelligence ($F(1,239) = 2.97$, $p > 0.01$); and intra-personal intelligence ($F(1,239) = 3.97$, $p > 0.01$).

The only statistically significant intelligence was spatial intelligence. Females gave a higher score in comparison to males.

Estimates of the Multiple Intelligences of Indian Females by the Three Race Groups

In the estimation of the multiple intelligences of Indian females by the three race groups, there was a statistically significant result for race. However, there were no gender or interaction effects.

Estimates of Multiple Intelligences of Indian Females: Race Effects

The study tested the following hypotheses:

- H0: Black, Indian and White university students do not differ in how they rate the intelligences of Indian females.
- H1: Black, Indian and White university students differ in how they rate the intelligences of Indian females.

The main effect for race was statistically significant ($F(2,238) = 7.40, p < 0.05$). The intelligences that were found to have statistically significant differences were overall, verbal, logical-mathematical, spatial, musical, bodily-kinetic, inter-personal, and intra-personal intelligences (see Table 7).

Table 7: Estimated Intelligences of Indian Females by Race

IQ's	Race						F value	P value
	Black		White		Indian			
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Ov	97.74	11.99	106.34	10.07	104.74	10.01	14.74	0.00
Verb	94.47	13.35	105.37	12.61	105.84	10.88	22.17	0.00
L-Math	97.46	16.01	109.50	14.23	103.93	12.46	14.11	0.00
Spa	87.82	13.34	100.53	13.36	99.00	11.15	24.98	0.00
Mus	86.52	12.06	99.94	14.63	99.13	11.60	28.32	0.00
BK	85.63	14.70	103.59	16.99	104.88	12.38	43.98	0.00
Inter	89.53	15.45	105.66	11.88	106.10	10.85	43.84	0.00
Intra	93.16	18.06	103.46	14.68	103.70	16.40	10.89	0.00

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK = Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

Overall intelligence was statistically significant for race ($F(2,238) = 14.74, p < 0.01$). White participants' mean estimate of the Indian females' overall intelligence was 106.34, while Indians estimated Indians females overall intelligence to be 104.74. Blacks' estimate of Indian females' verbal intelligence was 97.74. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference in White versus Black estimates, with a mean difference of 8.70. There also was a difference between Indian and Black estimates with a mean difference of 7.13. Whites and Indians gave Indian females higher estimates in overall intelligence, as opposed to Blacks who gave lower estimates.

Verbal intelligence was statistically significant for race ($F(2,238) = 22.17, p < 0.01$). White participants' mean estimate of Indian females for verbal intelligence was 105.37, whilst Indian participants gave Indian females an average of 105.84 for verbal intelligence. Black participants gave Indian females an average of 94.47 for verbal intelligence. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference in White versus Black estimates, with a mean difference of 10.90. There also was a difference between Indian and Black estimates with a mean difference of 11.41. Whites and Indians gave Indian females higher estimates in verbal intelligence, while Blacks gave Indian females lower estimates for verbal intelligence.

Logical-mathematical intelligence was statistically significant for race ($F(2,238) = 14.11, p < 0.01$). White participants gave Indian females a mean estimate of 109.49 for logical-mathematical intelligence, whereas Indian participants gave Indian females a mean estimate of 103.93 for logical-mathematical intelligence. Black participants gave Indian females a mean estimate of 97.46 for logical-mathematical intelligence. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference in White versus Black estimates, with a mean difference of 12.08. There also was a difference between Indian and Black estimates with a mean difference of 6.50. Whites and Indians gave Indian females higher estimates in logical-mathematical intelligence, whereas Blacks gave Indian females lower estimates for logical-mathematical intelligence.

Spatial intelligence was statistically significant for race ($F(2,238) = 24.98, p < 0.01$). White participants gave Indian females a mean estimated score of 100.53 for spatial intelligence and Indian participants estimated the spatial intelligence of Indian females to be 99.00 on average. Black participants estimated the spatial intelligence of Indian females as being 87.82. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference in White versus Black estimates, with a mean difference of 12.63. There also was a difference between Indian and Black estimates with a mean difference of 11.32. Whites and Indians gave Indian females higher estimates in spatial intelligence, whereas Blacks gave Indian females lower estimates for spatial intelligence.

Musical intelligence was statistically significant for race ($F(2,238) = 28.32, p < 0.01$). Whites' estimate for the musical intelligence of Indian females averaged 99.94. Indians gave the Indian females a mean estimate of 99.13 for musical intelligence and Blacks gave the Indian females a

mean estimate of 86.52 for musical intelligence. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference in White versus Black estimates, with a mean difference of 13.39. There also was a difference between Indian and Black estimates with a mean difference of 12.53. Whites and Indians gave Indian females higher estimates in musical intelligence, while Blacks gave Indian females lower estimates for musical intelligence.

Bodily-kinetic intelligence was statistically significant for race ($F(2,238) = 43.98, p < 0.01$). White participants gave Indian females a mean estimate of 103.59 for bodily-kinetic, while Indian participants gave Indian females an average of 104.88 for bodily-kinetic intelligence. Black participants gave Indian females a mean estimate of 85.63 for bodily-kinetic intelligence. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference in White versus Black estimates, with a mean difference of 17.81. There also was a difference between Indian and Black estimates with a mean difference of 19.12. Whites and Indians gave Indian females higher estimates in bodily-kinetic intelligence, whilst Blacks gave Indian females lower estimates for bodily-kinetic intelligence.

Inter-personal intelligence was statistically significant for race ($F(2,238) = 43.84, p < 0.01$). Whites gave Indian females a mean estimate of 105.66 for inter-personal intelligence, whilst Indians gave Indian females a mean estimate of 106.10 for inter-personal intelligence. Blacks gave Indian females an average of 89.53 for inter-personal intelligence. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference in White versus Black estimates, with a mean difference of 15.98. There also was a difference between Indian and Black estimates with a mean difference of 16.42. Whites and Indians gave Indian females higher estimates in inter-personal intelligence, whereas Blacks gave Indian females lower estimates for inter-personal intelligence.

Intra-personal intelligence was statistically significant for race ($F(2,238) = 10.89, p < 0.01$). Whites gave Indian females an average of 103.46 for intra-personal intelligence. Indians gave Indian females a mean estimate of 103.70 for intra-personal intelligence, while Blacks gave Indian females an average of 93.16 for intra-personal intelligence. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference in White versus black estimates, with a mean difference of 10.26. There also was a difference between Indian and Black estimates with a mean difference of 10.63. Whites and Indians gave Indian females higher

estimates in intra-personal intelligence, while Blacks gave Indian females lower estimates for intra-personal intelligence.

In sum, White and Indian participants on the one hand and Black participants on the other differed in how they rated the Indian females. Blacks gave lower scores to the Indian females in comparison to Whites and Indians, in overall, verbal, logical-mathematical, spatial, musical, bodily-kinetic, inter-personal, and intra-personal intelligences.

Estimates of the Multiple Intelligences of Black Males by the Three Race Groups

In the estimation of the multiple intelligences of Black males by the three race groups, there were statistically significant results for race and gender. However, there was no interaction effect.

Estimates of Multiple Intelligences of Black Males: Race Effects

The study tested the following hypotheses:

- H0: Black, Indian and White university students do not differ in how they rate the intelligences of Black males.
- H1: Black, Indian and White university students differ in how they rate the intelligences of Black males.

The main effect for race was statistically significant ($F(2,239) = 2.86, p < 0.05$). The intelligences that were found to have statistically significant differences were overall, verbal, and logical-mathematical intelligences (see Table 8).

Overall intelligence had a statistically significant result for race ($F(2,239) = 10.78, p < 0.01$). Whites gave Black males an average of 97.50 for overall intelligence and Indians gave Black males an average of 98.32 for overall intelligence. Blacks gave Black males an average of 105.01 for overall intelligence. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference in Black versus White estimates and Black versus Indian estimates, but no statistically significant difference between White and Indian estimates. The mean difference between Black and White estimates was 7.50 and between Black and Indian estimates

was 6.50. Blacks gave Black males higher estimates for overall intelligence, whereas Whites and Indians gave Black males lower estimates for overall intelligence.

Table 8: Estimated Intelligences of Black Males by Race

IQs	Race						F value	P value
	Black		White		Indian			
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Ov	105.02	10.99	97.50	14.04	98.32	8.99	10.78	0.00
Verb	101.26	13.87	95.13	14.48	92.75	10.37	9.50	0.00
L-Math	101.99	18.38	96.47	13.45	95.71	12.66	4.43	0.01
Spa	103.89	15.19	100.26	17.48	101.93	13.09	1.15	0.32
Mus	114.03	15.04	111.56	15.94	108.75	13.61	2.68	0.07
BK	109.11	16.41	110.28	17.52	105.35	12.83	2.11	0.12
Inter	98.63	13.27	96.58	15.79	94.17	10.55	2.35	0.10
Intra	100.95	16.74	101.05	14.12	96.19	11.61	2.96	0.05

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK= Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

Verbal intelligence had a statistically significant result for race ($F(2,239) = 9.50, p < 0.01$). White participants gave Black males a mean estimate of 95.13 for verbal intelligence, with Indians giving Black males a mean estimate of 92.75 for verbal intelligence. Blacks gave Black males a mean estimate of 101.26 for verbal intelligence. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference in Black versus White estimates and Black versus Indian estimates, but no statistically significant difference between White and Indian estimates. The mean difference between Black and White estimates was 6.24 and between Black and Indian estimates was 8.40. Blacks gave Black males higher averages for verbal intelligence as opposed to Whites and Indians who gave Black males low averages for verbal intelligence.

Logical-mathematical intelligence was statistically significant for race ($F(2,239) = 4.43, p < 0.01$). White participants gave Black males a mean estimate of 96.47 for logical-mathematical intelligence, while Indians gave Black males a mean estimate of 95.71 for logical-mathematical intelligence. Blacks gave Black males a mean estimate of 101.99 for logical-mathematical intelligence. Follow up analyses using the Bonferroni test indicated that there was a statistically significant difference between Black and Indian estimates, with a mean difference of

5.87. Indians gave Black males lower estimates in logical-mathematical intelligence, whereas Blacks gave Black males higher estimates for logical-mathematical intelligence.

The following intelligences were not statistically significant: spatial intelligence ($F(2,239) = 1.15, p > 0.01$); musical intelligence ($F(2,239) = 2.68, p > 0.01$); bodily-kinetic intelligence ($F(2,239) = 2.11, p > 0.01$); inter-personal intelligence ($F(2, 239) = 2.34, p > 0.01$); and intra-personal ($F(2, 239) = 2.96, p > 0.01$).

Overall, Blacks were given low estimates by Whites and Indians for overall and verbal intelligences. Indians gave Black males the lowest estimates for logical-mathematical intelligence.

Estimates of Multiple Intelligences of Black Males: Gender Effect

The study tested the following hypotheses:

- H0: Male and female university students from the three race groups do not differ in how they rate Black males.
- H1: Male and female university students from the three race groups differ in how they rate Black males.

The main effect for gender was statistically significant ($F(1,239) = 2.42, p < 0.05$). The intelligences that were found to have statistically significant differences were logical-mathematical and musical intelligences (see Table 9).

Logical-mathematical intelligence was statistically significant for gender ($F(1,239) = 10.02, p < 0.01$). Females estimated the logical-mathematical intelligence of Black males at 101.10, while males gave Black males an average of 95.02.

Musical intelligence was statistically significant for gender ($F(1,239) = 8.40, p < 0.01$). Females estimated the musical intelligence of Black males at 114.20 and males gave Black males an average of 108.70.

Table 9: Estimated Intelligences of Black Males by Gender

IQs	Gender				F value	P value
	Male		Female			
	Mean	S.D.	Mean	S.D.		
Ov	98.60	12.90	101.96	10.55	5.19	0.02
Verb	95.16	14.37	97.60	12.43	2.12	0.15
L-Math	95.02	16.99	101.10	12.78	10.02	0.00
Spa	99.85	15.17	104.21	15.22	4.94	0.03
Mus	108.70	14.14	114.20	15.33	8.40	0.00
BK	106.82	15.50	109.68	15.95	1.98	0.16
Inter	96.01	14.85	96.90	11.72	0.27	0.60
Intra	98.66	14.65	100.12	14.37	0.61	0.44

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK= Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

The following intelligences were not statistically significant: overall intelligence ($F(1,239) = 5.17$, $p > 0.01$); verbal intelligence ($F(1,239) = 2.12$, $p > 0.01$); spatial intelligence ($F(1,239) = 4.94$, $p > 0.01$); bodily-kinetic intelligence ($F(1,239) = 1.98$, $p > 0.01$); inter-personal intelligence ($F(1,239) = 0.27$, $p > 0.01$); and intra-personal intelligence ($F(1,239) = 0.61$, $p > 0.01$).

Overall, females gave higher estimates to Black males for logical-mathematical and musical intelligences than males did.

Estimates of the Multiple Intelligences of Black Females by the Three Race Groups

In the estimation of the multiple intelligences of Black females by the three race groups, there were statistically significant results for race and gender. However, there was no interaction effect.

Estimates of Multiple Intelligences of Black Females: Race Effects

The study tested the following hypotheses:

- H0: Black, Indian and White university students do not differ in how they rate the intelligences of Black females.

- H1: Black, Indian and White university students differ in how they rate the intelligences of Black females.

The main effect for race was statistically significant ($F(2,239) = 1.97, p < 0.05$). The intelligences that were found to have statistically significant differences were overall, logical-mathematical, spatial, musical, and inter-personal intelligences (see Table 10).

Table 10: Estimated Intelligences of Black Females by Race

IQ's	Race						F value	P value
	Black		White		Indian			
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Ov	104.03	11.75	97.93	14.53	98.34	10.62	6.61	0.00
Verb	117.08	19.01	98.13	16.62	96.66	11.75	2.19	0.11
L-Math	98.93	10.31	94.56	15.56	92.74	10.47	5.74	0.00
Spa	102.18	15.03	99.87	16.02	96.57	13.67	3.37	0.04
Mus	117.78	13.48	113.20	17.23	110.28	14.66	5.44	0.01
BK	112.53	15.41	109.41	19.41	107.12	19.41	2.5	0.80
Inter	106.12	17.08	100.72	18.20	97.52	11.77	7.51	0.00
Intra	103.63	17.79	102.50	13.33	98.59	11.41	2.76	0.07

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK= Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

Overall intelligence was statistically significant for race ($F(2,239) = 6.61, p < 0.01$). Whites gave Black females an average of 97.93 for overall intelligence, while Indians gave Black females an average of 98.34 for overall intelligence. Blacks gave Black females an average of 104.03 for overall intelligence. Follow up analyses using the Bonferroni test showed that Blacks gave higher estimates than both Whites and Indians. The mean difference between Black and White estimates was 5.95 and between Black and Indian estimates was 5.35. Blacks gave higher estimates to Black females for overall intelligence as opposed to Whites and Indians.

Logical-mathematical intelligence was statistically significant for race ($F(2,239) = 5.74, p < 0.01$). White participants gave Black females a mean estimate of 94.56 for logical-mathematical intelligence, whilst Indian participants gave Black females a mean estimate of 92.74 for logical-mathematical intelligence. Black participants gave Black females a mean estimate of 98.93.

Follow up analyses using the Bonferroni test indicates that Blacks gave higher estimates than Indians. The mean difference between Black and Indian estimates was 6.00. However, there was no statistically significant difference between White versus Indian estimates and between White versus Black estimates. Blacks as such gave higher estimates to Black females for logical-mathematical intelligence than Indians did.

Spatial intelligence was statistically significant for race ($F(2,239) = 3.37, p > 0.01$). Whites gave Black females a mean estimate of 99.87 for spatial intelligence. Indians gave Black females a mean estimate of 96.57 for spatial intelligence and Blacks gave Black females a mean estimate of 102.18 for spatial intelligence. Follow up analyses using the Bonferroni test showed that there was a difference in Black versus Indian estimates, with a mean difference of 5.26. However, there was no statistically significant difference between White versus Indian estimates, or between White versus Black estimates. Blacks as such gave higher estimates to Black females for spatial intelligence than their Indian counterparts did.

Musical intelligence was statistically significant for race ($F(2,239) = 5.44, p < 0.01$). White participants gave Black females a mean estimate of 113.20 for musical intelligence, while Indian participants gave Black females a mean estimate of 110.28 for musical intelligence. Black participants gave Black females a mean estimate of 117.78 for musical intelligence. Follow up analyses using the Bonferroni test showed that there was a difference in Black versus Indian estimates, with a mean difference of 7.20. However, there was no statistically significant difference between White versus Indian estimates, nor between White versus Black estimates. Blacks as such gave higher estimates to Black females for musical intelligence than Indians did.

Inter-personal intelligence was statistically significant for race ($F(2, 239) = 7.51, p < 0.01$). Whites gave Black females an average of 100.72 for inter-personal intelligence and Indians gave Black females an average of 97.52 for inter-personal intelligence. Blacks gave Black females an average of 106.12 for inter-personal intelligence. Follow up analyses using the Bonferroni test showed that there was a difference in Black versus Indian estimates, with a mean difference of 8.31. However, there was no statistically significant difference between White versus Indian estimates, or between White versus Black estimates. Blacks gave Black females higher estimates as opposed to the Indians who gave the Black females low estimates.

The following intelligences were not statistically significant: verbal intelligence ($F(2,239) = 2.19, p > 0.01$); bodily-kinetic intelligence ($F(2,239) = 2.50, p > 0.01$); and intra-personal intelligence ($F(2, 239) = 2.76, p > 0.01$).

All in all, for all the intelligences found to be statistically significant, differences in estimations was primarily between the Indian and Black populations, with the only exception occurring in overall intelligence, where differences were between Black versus White and Indian estimates.

Estimates of Multiple Intelligences of Black Females: Gender Effect

The study tested the following hypotheses:

- H0: Male and female university students from the three race groups do not differ in how they rate Black females.
- H1: Male and female university students from the three race groups differ in how they rate Black females.

The main effect for gender was statistically significant ($F(1,239) = 2.73, p < 0.05$). The intelligences that were found to have statistically significant differences were overall, logical-mathematical, spatial, musical, bodily-kinetic and inter-personal intelligences (see Table 11).

Overall intelligence was statistically significant for gender ($F(1,239) = 11.03, p < 0.01$). Males gave Black females an average of 97.51 and females gave Black females an average of 102.69. Logical-mathematical intelligence was statistically significant for gender ($F(1,239) = 6.47, p < 0.01$). Males gave Black females an estimate of 93.42 and females gave Black females an estimate of 97.40.

Spatial intelligence was statistically significant ($F(1,239) = 14.28, p < 0.01$). Males gave Black females an average of 96.14 and females gave Black females a mean of 102.95.

Musical intelligence was statistically significant for gender ($F(1,239) = 11.89, p < 0.01$). Males gave Black females an estimate of 110.46 while females gave Black females an estimate of 117.05.

Table 11: Estimated Intelligences of Black Females by Gender

IQs	Gender				F value	P value
	Male		Female			
	Mean	S.D.	Mean	S.D.		
Ov	97.51	13.95	102.69	10.39	11.03	0.00
Verb	105.82	19.85	102.09	12.69	0.17	0.68
L-Math	93.42	13.89	97.40	10.43	6.47	0.01
Spa	96.14	13.69	102.95	14.30	14.28	0.00
Mus	110.46	14.79	117.05	15.29	11.89	0.00
BK	106.73	16.12	112.65	15.36	8.54	0.00
Inter	98.80	17.55	104.10	13.96	8.02	0.01
Intra	99.39	14.85	103.82	14.16	5.59	0.02

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK= Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

Bodily-kinetic intelligence was statistically significant for gender ($F(1,239) = 8.54, p < 0.01$). Males gave Black females an estimate of 106.73 while females gave Black females an estimate of 112.65.

Inter-personal intelligence was statistically significant for gender ($F(1, 239) = 8.02, p < 0.01$). Males gave Black females an estimate of 98.80 while females gave Black females an estimate of 104.10.

The following intelligences were not statistically significant: verbal intelligence ($F(1,239) = 0.17, p > 0.01$); and intra-personal intelligence ($F(1,239) = 5.59, p > 0.01$).

Overall, females gave Black females' higher estimates for overall, logical-mathematical, spatial, musical, bodily-kinetic and inter-personal intelligences.

Estimates of the Multiple Intelligences of White Males by the Three Race Groups

In the estimation of the multiple intelligences of White males by the three race groups, there were statistically significant results for race and gender. However, there was no interaction effect.

Estimates of Multiple Intelligences of White Males: Race Effects

The study tested the following hypotheses:

- H0: Black, Indian and White university students do not differ in how they rate the intelligences of White males.
- H1: Black, Indian and White university students differ in how they rate the intelligences of White males.

The main effect for race was statistically significant ($F(2,239) = 5.25, p < 0.05$). The intelligences that were found to have statistically significant differences were musical, bodily-kinetic, and inter-personal intelligences (see Table 12).

Musical intelligence was statistically significant for race ($F(2,239) = 26.48, p < 0.01$). Whites gave White males a mean estimate of 99.32 for musical intelligence, whereas Indians gave White males a mean estimate of 102.19 for musical intelligence. Blacks gave White males a mean estimate of 89.60 for musical intelligence. Follow up analyses using the Bonferroni test indicated Black estimates were lower than White and Indian estimates. The mean difference between White and Black estimates was 9.77 and between Indian and Black estimates was 12.50. There was no statistically significant difference between the White and Indian estimates. Blacks gave White males lower estimates for musical intelligence than Whites and Indians did.

Bodily-kinetic intelligence was statistically significant for race ($F(2,239) = 18.62, p < 0.01$). White participants gave White males an average of 104.60 for bodily-kinetic intelligence. Indians gave White males an average of 100.96 for bodily-kinetic intelligence, while Blacks gave White males an average of 91.96 for bodily-kinetic intelligence. Follow up analyses using the Bonferroni test indicated that Black estimates were lower than White and Indian estimates. The mean difference between White and Black estimates was 12.52; the mean difference between Indian and Black estimates was 9.00. There was no statistically significant difference between the White and Indian estimates. Blacks gave White males lower estimates for bodily-kinetic intelligence than Whites and Indians did.

Inter-personal intelligence was statistically significant race ($F(2, 239) = 5.22, p < 0.01$). Whites gave White males an average of 101.13 for inter-personal intelligence, while Indians gave White

males an average of 96.76 for inter-personal intelligence. Blacks gave White males an average of 94.46 for inter-personal intelligence. Follow up analyses using the Bonferroni test indicated that the main difference in estimations was between Blacks and Whites. The mean difference between Whites' and Blacks' estimates was 6.73, with Blacks giving lower estimates. There was no statistically significant difference between Blacks and Indians or between Indians and Whites. Yet again, Blacks gave White males lower estimates for inter-personal intelligence as opposed to Whites and Indians.

Table 12: Estimated Intelligences of White Males by Race

IQs	Race						F value	P value
	Black		White		Indian			
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Ov	105.51	12.10	106.67	8.62	103.92	10.58	1.31	0.27
Verb	104.83	17.20	104.13	15.56	103.92	11.93	0.10	0.91
L-Math	106.86	13.30	108.56	13.52	106.35	12.73	0.59	0.56
Spa	102.60	14.91	106.65	12.16	103.38	10.67	2.30	0.10
Mus	89.60	13.05	99.32	10.11	102.19	11.95	26.48	0.00
BK	91.96	16.80	104.60	11.46	100.96	11.44	18.62	0.00
Inter	94.46	16.37	101.13	11.73	96.76	9.89	5.22	0.01
Intra	102.48	17.06	103.78	14.94	100.83	12.92	0.75	0.48

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK= Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

The following intelligences were not statistically significant: overall intelligence ($F(2,239) = 1.31$, $p > 0.01$); verbal intelligence ($F(2,239) = 0.10$, $p > 0.01$); logical-mathematical intelligence ($F(2,239) = 0.59$, $p > 0.01$); spatial intelligence ($F(2,239) = 2.30$, $p > 0.01$); and intra-personal intelligence ($F(2, 239) = 0.75$, $p > 0.01$).

Estimates of Multiple Intelligences of White Males: Gender Effect

The study tested the following hypotheses:

- H0: Male and female university students from the three race groups do not differ in how they rate White males.

- H1: Male and female university students from the three race groups differ in how they rate White males.

The main effect for gender was statistically significant ($F(1,239) = 2.63, p < 0.05$). The only intelligence found to have statistically significant difference was spatial intelligence (see Table 13).

Table 13: Estimated Intelligences of White Males by Gender

IQs	Gender				F value	P value
	Male		Female			
	Mean	S.D.	Mean	S.D.		
Ov	104.42	9.82	106.31	11.36	1.89	0.17
Verb	102.87	16.10	105.72	13.69	2.48	0.12
L-Math	105.92	12.56	108.60	13.67	2.46	0.12
Spa	101.48	12.20	106.94	12.92	11.49	0.00
Mus	98.65	12.57	95.43	13.34	4.52	0.04
BK	99.07	14.68	99.29	14.50	0.012	0.90
Inter	96.80	12.28	98.12	14.33	0.59	0.44
Intra	100.28	15.81	104.48	14.12	4.57	0.03

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK= Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

Spatial intelligence was statistically significant for gender ($F(1,239) = 11.49, p < 0.01$). Males gave White males an estimate of 101.48, whereas females gave White males an estimate of 106.94.

The following intelligences were not statistically significant: overall intelligence ($F(1,239) = 11.89, p > 0.01$); verbal intelligence ($F(1,239) = 0.17, p > 0.01$); logical-mathematical intelligence ($F(1,239) = 2.46, p > 0.01$); musical intelligence ($F(1,239) = 4.52, p > 0.01$); bodily-kinetic intelligence ($F(1,239) = 0.16, p > 0.01$); inter-personal intelligence ($F(1,239) = 0.59, p > 0.01$); and intra-personal intelligence ($F(1,239) = 4.57, p > 0.01$).

Yet again, females gave a higher estimate for spatial intelligence to Whites males than did males.

Estimates of the Multiple Intelligences of White Females by the Three Race Groups

In the estimation of the multiple intelligences of White females by the three race groups, there were statistically significant results for race and gender. However, there was no interaction effect.

Estimates of Multiple Intelligences of White Females: Race Effects

To begin with, the study tested the following hypotheses:

- H0: Black, Indian and White university students do not differ in how they rate the intelligences of White females.
- H1: Black, Indian and White university students differ in how they rate the intelligences of White females.

The main effect for race was statistically significant ($F(2,239) = 6.11, p < 0.05$). The intelligences that were found to have statistically significant differences were overall, verbal, musical, bodily-kinetic, and inter-personal intelligences (see Table 14).

Overall intelligence was statistically significant for race ($F(2,239) = 6.61, p < 0.01$). Whites gave White females a mean estimate of 107.56 for overall intelligence, whereas Indians gave White females a mean estimate of 105.55 for overall intelligence. Blacks gave White females a mean estimate of 100.59 for overall intelligence. Follow up analyses using the Bonferroni test showed that Black estimates were lower than White and Indian estimates. The mean difference between Black and White estimates was 6.95; the difference between Black and Indian estimates was 5.05. White and Indian estimates did not vary. Blacks gave lower estimates to White females than Whites and Indians did.

Verbal intelligence was statistically significant for race ($F(2,239) = 4.72, p < 0.01$). White participants gave White females an average of 112.04 for verbal intelligence. Indian participants gave White females an average of 106.85 for verbal intelligence, whilst Blacks gave White females an average of 105.77 for verbal intelligence. Follow up analyses using the Bonferroni test indicated that Black estimates were lower than White and Indian estimates. The mean difference between Black and White estimates was 6.41; the difference between Black and Indian estimates

was 1.12. White and Indian estimates did not vary. Blacks gave lower estimates to White females than Whites and Indians did.

Table 14: Estimated Intelligences of White Females by Race

IQs	Race						F value	P value
	Black		White		Indian			
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
Ov	100.59	14.39	107.56	12.07	105.55	10.72	6.61	0.00
Verb	105.77	14.60	112.04	13.35	106.85	12.45	4.72	0.01
L-Math	102.27	11.48	105.12	12.90	101.05	11.91	2.28	0.10
Spa	98.31	15.40	103.09	13.34	100.63	9.67	2.73	0.07
Mus	88.52	15.78	101.85	12.67	102.34	10.28	29.02	0.00
BK	91.97	18.62	105.16	13.19	103.07	10.52	19.33	0.00
Inter	96.71	15.55	108.02	15.14	100.65	12.69	12.33	0.00
Intra	102.32	17.18	107.24	13.29	104.63	12.46	2.27	0.11

Legend: *Ov* = Overall Intelligence, *Verb* = Verbal Intelligence, *L-Math* = Logical-mathematical Intelligence, *Spa* = Spatial Intelligence, *Mus* = Musical Intelligence, *BK* = Bodily-kinetic Intelligence, *Inter* = Inter-personal Intelligence, *Intra* = Intra-personal Intelligence.

Musical intelligence was statistically significant for race ($F(2,239) = 29.02, p < 0.01$). Whites gave White females a mean estimate of 101.85 for musical intelligence, whereas Indians gave White females a mean estimate of 102.34 for musical intelligence. Blacks gave White females a mean estimate of 88.52 for musical intelligence. Follow up analyses using the Bonferroni test indicated that Blacks gave lower estimates in comparison to Whites and Indians. The mean difference between Black and White estimates was 13.41; the mean difference between Black and Indian estimates was 13.76. White and Indian estimates did not vary. Blacks gave lower estimates to White females than Whites and Indians did.

Bodily-kinetic intelligence was statistically significant for race ($F(2,239) = 19.33, p < 0.01$). Whites gave White females an average of 105.16 for bodily-kinetic intelligence, while Indians gave White females an average of 103.07 for bodily-kinetic intelligence. Blacks gave White females an average of 91.97 for bodily-kinetic intelligence. Follow up analyses using the Bonferroni test indicated that Blacks gave lower estimates in comparison to their White and Indian counterparts. The mean difference between Black and White estimates was 13.04; the mean difference between

Black and Indian estimates was 10.88. White and Indian estimates did not vary. Blacks gave lower estimates to White females than Whites and Indians.

Inter-personal intelligence was statistically significant for race ($F(2, 239) = 12.33, p < 0.01$). Whites gave White females a mean estimate of 108.02 for inter-personal intelligence. Indians gave White females a mean estimate of 100.65 for inter-personal intelligence, whereas Blacks gave White females a mean estimate of 96.71 for inter-personal intelligence. Follow up analyses using the Bonferroni test showed that Blacks varied from their White counterparts in their estimates, giving lower scores. The mean difference between White and Black estimates was 11.35. White and Indian estimates did vary, with a mean difference of 7.29. Blacks and Indians gave lower scores to White females as opposed to Whites.

The following intelligences were not statistically significant: logical-mathematical intelligence ($F(2, 239) = 2.28, p > 0.01$); spatial intelligence ($F(2, 239) = 2.73, p > 0.01$); and intra-personal intelligence ($F(2, 239) = 2.27, p > 0.01$).

In general, Blacks gave White females lower estimates for overall, verbal, musical, bodily-kinetic intelligences. As for inter-personal intelligence, Blacks and Indians gave low estimates to White females.

Estimates of Multiple Intelligences of White Females: Gender Effect

The study tested the following hypotheses:

- H0: Male and female university students from the three race groups do not differ in how they rate White females.
- H1: Male and female university students from the three race groups differ in how they rate White females.

The main effect for gender was statistically significant ($F(1, 239) = 2.79, p < 0.05$) (see Table 15). However, the only intelligence found to have a statistically significant difference was spatial intelligence. Spatial intelligence was statistically significant for gender ($F(1, 239) = 7.77, p > 0.01$).

Males gave White females an average of 98.35 and females gave White females an average of 103.00.

The following intelligences were not statistically significant: overall intelligence ($F(1,239) = 2.07$, $p > 0.01$); verbal intelligence ($F(1,239) = 0.08$, $p > 0.01$); logical-mathematical intelligence ($F(1,239) = 3.27$, $p > 0.01$); musical intelligence ($F(1,239) = 0.90$, $p > 0.01$); bodily-kinetic intelligence ($F(1,239) = 1.50$, $p > 0.01$); inter-personal intelligence ($F(1, 239) = 2.40$, $p > 0.01$); and intra-personal intelligence ($F(1,239) = 1.76$, $p > 0.01$).

Table 15: Estimated Intelligences of White Females by Gender

IQs	Gender				F value	P value
	Male		Female			
	Mean	S.D.	Mean	S.D.		
Ov	103.40	14.79	105.74	10.37	2.07	0.15
Verb	108.48	13.92	107.97	13.64	0.08	0.77
L-Math	101.40	12.59	104.22	11.53	3.27	0.07
Spa	98.35	13.73	103.00	12.17	7.77	0.01
Mus	98.38	15.75	96.75	13.50	0.90	0.34
BK	101.22	16.17	98.91	15.18	1.50	0.22
Inter	100.34	16.16	103.24	14.06	2.40	0.12
Intra	103.48	15.27	105.98	13.90	1.76	0.19

Legend: Ov = Overall Intelligence, Verb = Verbal Intelligence, L-Math = Logical-mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK= Bodily-kinetic Intelligence, Inter = Inter-personal Intelligence, Intra = Intra-personal Intelligence.

Overall, females still gave White females higher estimates in comparison to their male counterparts for spatial intelligence.

Best Predictors of Overall Intelligence: Self-estimates

Multiple regression analysis was done to determine which of the seven intelligences is the best predictor of overall intelligence. Verbal intelligence, bodily-kinetic intelligence, logical-mathematical intelligence, musical intelligence and spatial intelligence respectively, emerged as the best predictors of overall intelligence. Verbal intelligence accounted for 30% of the total variance of IQ with an R^2 of 0.30. Verbal intelligence was the best predictor of overall intelligence

(Beta = 0.44, $t = 8.63$, $p < 0.05$). Musical intelligence was however negatively associated with intelligence (Beta = -0.17, $t = -2.75$, $p < 0.05$) (see Table 16).

Table 16: Best Predictors of Overall Intelligence for Self

	Beta	t	Sig.
Verb	0.44	7.81	0.00
BK	0.32	5.19	0.00
L-Math	0.19	3.57	0.00
Mus	-0.17	-2.75	0.01
Spa	0.12	2.20	0.03

Legend: Verb = Verbal Intelligence, L-Math = Logical-Mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, BK = Bodily-kinetic Intelligence

Best Predictors of Overall Intelligence: Self-estimates by Race

Black Students

In this study Black students rated verbal, bodily-kinetic and musical intelligences respectively, as the best predictors of their overall intelligence. Musical intelligence was however negatively associated with overall intelligence. Verbal intelligence accounted for 21% of the total variance of IQ with an R^2 of 0.21 (Beta = 0.41, $t = 4.59$, $p < 0.05$) (see Table 17).

Table 17: Best Predictors of Overall Intelligence: Black Students

	Beta	t	Sig.
Verb	0.41	4.59	0.00
BK	0.06	4.85	0.00
Mus	-0.32	-2.61	0.01

Legend: Verb = Verbal Intelligence, Mus = Musical Intelligence, BK = Bodily-kinetic Intelligence

Indian Students

Indian students rated verbal and spatial intelligences respectively as the only best predictors of their overall intelligence. Verbal intelligence accounted for 30% of the total variance of IQ with an R^2 of 0.30 (Beta = 0.40, $t = 3.85$, $p < 0.05$) (see Table 15).

Table 18: Best Predictors of Overall Intelligence: Indian Students

	Beta	t	Sig.
Verb	0.40	3.85	0.00
Spa	0.24	2.31	0.02

Legend: Verb = Verbal Intelligence, Spa = Spatial Intelligence

White Students

White students rated verbal, logical-mathematical and bodily-kinetic intelligences respectively as the best predictors of their overall intelligence. Verbal intelligence accounted for 23% of the total variance of IQ with an R^2 of 0.23 (Beta = 0.37, $t = 3.72$, $p < 0.05$) (see Table 19).

Table 19: Best Predictors of Overall Intelligence: White Students

	Beta	t	Sig.
Verb	0.37	3.72	0.00
L-Math	0.33	3.25	0.00
BK	0.28	3.06	0.00

Legend: Verb = Verbal Intelligence, L-Math = Logical-Mathematical Intelligence, BK = Bodily-kinetic Intelligence

Best Predictors of Overall Intelligence: Indian Males' Multiple Intelligences Estimated by the Three Race Groups

Out of the seven intelligences, logical-mathematical intelligence, verbal intelligence and bodily-kinetic intelligence were considered to be predictors of overall intelligence for the Indian males. Logical-mathematical intelligence accounted for 25% of the total variance of IQ with an R^2 of 0.25. Logical-mathematical intelligence was the best predictor of overall intelligence (Beta = 0.38, $t = 7.25$, $p < 0.05$) (see Table 20).

Table 20: Best Predictors of Overall Intelligence for Indian Males by the Three Race Groups

	Beta	t	Sig.
L-Math	0.38	7.25	0.00
Verb	0.32	6.14	0.00
BK	0.21	4.17	0.00

Legend: Verb = Verbal Intelligence, L-Math = Logical-Mathematical Intelligence, BK = Bodily-kinetic Intelligence

Best Predictors of Overall Intelligence: Indian Females' Multiple Intelligences Estimated by the Three Race Groups

Logical-mathematical intelligence, verbal intelligence, musical intelligence and intra-personal intelligence were considered to be predictors of overall intelligence for the Indian female. Logical-mathematical intelligence accounted for 35% of the total variance of IQ with an R^2 of 0.35. Logical-mathematical intelligence was the best predictor of Overall intelligence (Beta = 0.46, $t = 9.86$, $p < 0.05$) (see Table 21).

Table 21: Best Predictors of Overall Intelligence for Indian Females by the Three Race Groups

	Beta	t	Sig.
L-Math	0.46	9.86	0.00
Verb	0.32	6.33	0.00
Mus	0.12	2.54	0.01
Intra	0.10	2.05	0.04

Legend: Verb = Verbal Intelligence, L-Math = Logical-Mathematical Intelligence, Mus = Musical Intelligence, Intra = Intra-personal Intelligence

Best Predictors of Overall Intelligence: Black Males' Multiple Intelligences Estimated by the Three Race Groups

For the Black male, predictors of Overall intelligence were Verbal intelligence, Intra-personal intelligence, spatial intelligence, musical intelligence and logical-mathematical intelligence. Verbal intelligence accounted for 27% of the variance of IQ with an R^2 of 0.27. Verbal intelligence was the best predictor of Overall intelligence (Beta = 0.31, $t = 5.41$, $p < 0.05$) (see Table 22).

Best Predictors of Overall Intelligence: Black Females' Multiple Intelligences Estimated by the Three Race Groups

For Black females, logical mathematical intelligence, inter-personal intelligence and spatial intelligence were predictors for overall intelligence. Logical-mathematical intelligence accounted for 44% of the variance of IQ with an R^2 of 0.44. Logical-mathematical intelligence was the best predictor of overall intelligence (Beta = 0.43, $t = 8.01$, $p < 0.05$) (see Table 23).

Table 22: Best Predictors of Overall Intelligence for Black Males by the Three Race Groups

	Beta	t	Sig.
Verb	0.31	5.41	0.00
Intra	0.22	4.15	0.00
Spa	0.22	4.03	0.00
Mus	0.12	2.37	0.02
L-Math	0.11	2.06	0.04

Legend: Verb = Verbal Intelligence, L-Math = Logical-Mathematical Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, Intra = Intra-personal Intelligence

Table 23: Best Predictors of Overall intelligence for Black Females by the Three Race Groups

	Beta	t	Sig.
L-Math	0.43	8.01	0.00
Inter	0.32	6.34	0.00
Spa	0.17	3.33	0.00

Legend: L-Math = Logical-Mathematical Intelligence, Spa = Spatial Intelligence, Inter = Inter-personal Intelligence

Best Predictors of Overall Intelligence: White Males' Multiple Intelligences Estimated by the Three Race Groups

Logical-mathematical intelligence, intra-personal intelligence, spatial intelligence, and inter-personal intelligence were the best predictors of overall intelligence for the White male. Logical-mathematical intelligence accounted for 24% of the variance of IQ. Logical-mathematical intelligence was the best predictor of overall intelligence (Beta = 0.30, $t = 5.02$, $p < 0.05$) (see Table 24).

Table 24: Best Predictors of Overall Intelligence for White Males by the Three Race Groups

	Beta	t	Sig.
L-Math	0.30	5.02	0.00
Intra	0.20	3.24	0.00
Spa	0.24	4.05	0.00
Inter	0.13	2.33	0.02

Legend: L-Math = Logical-Mathematical Intelligence, Spa = Spatial Intelligence, Inter = Inter-personal Intelligence

Best Predictors of Overall Intelligence: White Females' Multiple Intelligences Estimated by the Three Race Groups

Spatial intelligence, verbal intelligence, musical intelligence and intra-personal intelligence were predictors of overall intelligence for the White female. Spatial intelligence accounted for 26% of the variance of IQ with an R^2 of 0.26. Spatial intelligence was the best predictor of overall intelligence (Beta = 0.23, $t = 3.70$, $p < 0.05$) (see Table 25).

Table 25: Best Predictors of Overall Intelligence for White Females by the Three Race Groups

	Beta	t	Sig.
Spa	0.23	3.70	0.00
Verb	0.28	4.68	0.00
Mus	0.28	5.11	0.00
Intra	0.12	2.00	0.05

Legend: Verb = Verbal Intelligence, Spa = Spatial Intelligence, Mus = Musical Intelligence, Intra = Intra-personal Intelligence

Conclusion

In the self-estimates of multiple intelligences there was no gender effect. Although there was a race effect, it was restricted to overall, verbal and spatial intelligence. In these intelligences, Whites seemed to give higher estimates than Indians and Blacks. However, for verbal intelligence the differences were between White and Black estimates.

In the estimation of the multiple intelligences of Indian males by the three race groups, for the race effect all the intelligences were statistically significant except for overall intelligence. Nonetheless, for the statistically significant intelligences the Bonferroni test indicated that there was no difference in White and Indian estimates, but that main differences occurred between Whites versus Blacks and between Indians versus Blacks. Blacks gave lower estimates as opposed to their White and Indian counterparts. For the gender effect, only spatial and musical intelligences were statistically significant with females giving Indian males higher estimates than males.

A look at the estimation of the multiple intelligences of Indian females indicates that for the race effect all the intelligences were statistically significant. Yet again, the Bonferroni test showed that was no difference in White and Indian estimates and that key disparities were between White versus Black estimates and Indian versus Black estimates, with Blacks giving lower estimates.

The results of the estimation of the multiple intelligences of Black males by the three race groups indicated that for the race effect only overall, verbal and logical-mathematical intelligences were found to be statistically significant. For both overall and verbal intelligences, there was a difference between Black versus White estimates and Black versus Indian estimates, but no statistically significant difference between White and Indian estimates. As for logical-mathematical intelligence, there was a difference between Black and Indian estimates, but not between White and Indian estimates or Black and White estimates. This means that for this intelligence Indians gave particularly low estimates. For the gender effect, only logical-mathematical and musical intelligence were statistically significant with females yet again giving higher estimates than males.

In the estimation of the multiple intelligences of Black females by the three race groups, results indicated that for the race effect all the intelligences were statistically significant except for verbal, bodily-kinetic and intra-personal intelligences. There was no statistically significant difference between White versus Indian estimates for overall, logical-mathematical, spatial, musical and inter-personal intelligences. There also was no statistically significant difference between White versus Black estimates for logical-mathematical, spatial, musical and inter-personal intelligences. There was a statistically significant gender effect for overall, logical-mathematical, spatial, musical, bodily-kinetic, and inter-personal intelligences. Females still gave higher estimates than males.

In the estimation of the multiple intelligences of White males by the three race groups, results indicated that for the race effect musical, bodily-kinetic and inter-personal intelligences were statistically significant. In all of these intelligences, there was no statistically significant difference between White versus Indian estimates. However, these two race groups varied in their estimates in relation to Blacks. There was a statistically significant gender effect which was only present for spatial intelligence, with females still giving higher estimates in comparison to males.

In the estimation of the multiple intelligences of White females by the three race groups, results indicated that for the race effect overall, verbal, musical, bodily-kinetic and inter-personal intelligences were statistically significant. In all of these intelligences, White and Indian estimates did not vary statistically. The observed differences were between Black and White estimates and also between Black and Indian estimates. There was a statistically significant gender effect observed for logical-mathematical intelligence. Still, females gave higher estimates.

From the above, a race effect was evident in all the exercises. A gender effect was also observed for all the exercises except for the self-estimates task. It seems that race plays a key role in the estimation of intelligences. Most of the differences in estimates occurred between Black estimates and estimates of the other two groups. It would suffice to say that the results indicated a semblance of sameness between the White and Indian groups. As for the gender effect, when it occurred, females gave higher estimates to themselves and other race groups, perhaps indicating that they are less prejudiced toward the other, compared to male participants.

In looking at what was the best predictor of overall intelligence, in the self-estimates task, verbal intelligence stood out as the best predictor of overall intelligence, whilst musical abilities were negatively associated with intelligence. Nonetheless, this confirms popular perceptions that verbal and logical-mathematical intelligences are the cornerstones of what intelligence is held to consist of. This was yet again confirmed by the results from the Indian group, in which for both males and females, logical-mathematical intelligence happened to be the best predictor of overall intelligence, with verbal intelligence coming second. Black females and White males had logical-mathematical intelligence as the best predictor of overall intelligences. Black males and White females had verbal and spatial intelligences respectively as the best predictors of intelligence. The results may indicate that even within particular groups (e.g. male and female) perceptions vary as to what intelligence consists of.

CHAPTER 5

DISCUSSION

This chapter discusses possible explanations of the results. It will be argued that the gender effect observed in the estimations of multiple intelligences may be influenced by present government policies that advocate gender equity in education, employment and other spheres of life. This emphasis on empowering the female may have positively affected females' self-perceptions of intellectual ability. For the race effects observed, it is suggested that the ratings given by participants to members of other race groups may have been motivated by racialized sentiments or racial antipathies.

Finally this chapter looks at the best predictors of overall intelligence as highlighted by individuals and members of the three race groups. It seems that in contemporary society both individualistic and collectivist cultures highly regard intelligences with social components such as verbal, bodily-kinetic, spatial, interpersonal and intrapersonal intelligences. Logical-mathematical intelligence was found to be one of the best predictors of intelligence for the Indians males and females, Black females and White males.

Self-estimates of Multiple Intelligences

Self-estimates of Multiple Intelligences: Gender Effect

Most previous studies conducted outside Africa have shown that males often rate themselves higher than women do, especially on logical-mathematical and spatial intelligence (Furnham & Fong, 2000). However, in this study there was no statistically significant difference in male and female self-estimates. Nonetheless, this result mirrors the findings of Furnham, Callahan and Akande (2004) where they found no statistically significant gender effect when looking at the self-estimates of Black, Indian and White South African students.

It is not clear as to why this is the case, but it could be theorized that recent changes in social policies advocating gender equity might have played a role in sensitising university female students about their intellectual competence, in addition to sensitising most students on sex-role stereotyping over these issues. Francis (2000), in her study of the subject preferences and

perceptions of gender and subject ability of students doing their final high school year, found that participants positioned females as more able in subjects traditionally regarded as the domain of males which she argued could be as a result of the current hegemony of equal opportunities discourse as applied to females. This, Francis (ibid.) further argued, created an acceptability of the articulation of narratives of female superiority than those of male superiority. It could be argued that this factor may apply to this study. Hoover (1998) found that female senior high school students had high career aspirations, similar to their male counterparts. Hoover (ibid.) argued that more females were aspiring for the same careers as their male counterparts, suggesting a change in perceptions of gender roles and abilities.

Gender equality was always a core value of the struggle for a democratic South Africa (Albertyn, 1994). This value was immediately adopted into the country's governance processes with the establishment of the new dispensation in 1994 and was enshrined in the 1996 Constitution of South Africa. It is the strong political commitment to this value that moved the South African government to craft gender sensitive national policies. The commitment to achieving gender equality motivated South Africa to accede to regional and international instruments promoting gender equality, increased awareness of gender issues in all spheres of life, and enhanced the integration of gender considerations into government policies and programmes (Meintjes, 2005). This gender policy framework is premised on the view that gender equality cannot be attained without women's participation in all spheres of life as well as the empowerment, in particular, of the most deprived women.

As such, the implementation of the gender equity policy has seen increased numbers of women making in-roads into areas that were previously male dominated or even foreclosed to women (Hassim, 2003). More importantly for this study, it would appear that the implementation of gender sensitive policies has not only seen an increase in the number of women attending university and other educational institutes in general, but may have also sensitized women on their ability to compete with men based on the premise of equality in intellect and talent. Due to this policy, universities in South Africa are obliged to adopt affirmative action policies targeting women, in addition to affirming in their curriculums gender equality.

The university context is one that is perpetually saturated with a myriad of discourses. It is a place of knowledge appropriation, aimed at skill enhancement for better placements into the job market. In such a context, certain ideologies are affirmed and others deconstructed. In this setting students

are encouraged to cultivate critical minds towards an adoption of new paradigms of thought. Students are in the process bound to be made aware of or sensitized to the negativity of sex-role stereotyping on issues linked to *inter alia* intelligence. In that case, one can expect that females attending university may ultimately be influenced to perceive their social roles differently, as well as their intellectual abilities. Such women, it can be postulated, will be more inclined to perceive parity in skills with their male counterparts. Consequently, this factor could also account for the lack of disparity in this study in male and female self-estimates of multiple intelligences.

Self-estimates of Multiple Intelligences: Race Effect

A statistically significant result was found for the race variable for the self-estimates of multiple intelligences. Whites gave themselves higher self-estimates for overall, verbal and spatial intelligences than Blacks and Indians did for themselves. This finding concurs with the findings of Furnham, Callahan and Akande (2004) where they found that White students rated their verbal, logical-mathematical, interpersonal, and intrapersonal intelligences higher than Blacks did. Although the specific intelligences found in Furnham and his colleagues study and in this study vary, the point is that Whites still gave themselves higher self-estimates than did Blacks or Indians.

Furnham and his colleagues (2004) argue that this result could be explained behind a background of South Africa's racialized history, "namely that both Blacks and Whites were socialized in a racist society that encouraged White hubris and Black humility" (p. 283). Whites were socialized to exude excessive pride in their abilities and Blacks on the other hand were socialized to downplay their abilities. It can be argued that this factor is applicable to this study.

During apartheid, all sorts of privileges were accorded to Whites at the expense of other race groups, more so Blacks. This was based on the misguided ideology that preaches the superiority of the White race over all other things under the sun and with that offers justification for perceptions of intellectual supremacy amongst Whites. As previously mentioned, post-apartheid South Africa still remains a highly racialized society in which race still largely determines social interactions and transactions. Thus, it can be postulated that White students in this study may have been socialized to perceive some sort of intellectual dominance and as a result gave themselves higher self-estimates of multiple intelligences.

Estimates of Multiple Intelligences of other Race Group Members

Estimates of Multiple Intelligences of other Race Group Members: Gender Effect

The results suggest that there is a statistically significant gender difference in the estimations of multiple intelligences of other race group members. Females gave higher estimates to other race group members than males did. Females gave Indian males higher estimates for spatial intelligence. Females also gave higher estimates for logical-mathematical and musical intelligences to Black males. Yet again, Black females received higher estimates by females for overall, logical-mathematical, spatial, musical, bodily-kinetic and intrapersonal intelligences. This trend was repeated for White males and females, who received from females higher estimates for spatial intelligence.

What is salient from the results is that not only did females give higher estimates to themselves and others, but they are also generally gave higher estimates across gender in areas that are primarily regarded as male domains namely spatial and logical-mathematical intelligences. This was the case for the Indian male, Black male, Black female, White male and White female. However, it was the Black female who received the highest estimates in six intelligences.

It can be argued that females gave higher means for all the intelligences as opposed to their male counterparts, since females perceive homogeneity in abilities as opposed to males who perceive heterogeneity in abilities. Lever (1978) found that the style of play and interaction differed between genders. Boys' games are more competitive and have a set of fixed rules. In addition, they have a predetermined end point where players are divided into winners and losers (ibid.). Girls' games are more collaborative and involve more sophisticated forms of discourse and conceptualisation (ibid.). As such, boys are more likely to indulge in games where participants take different roles, whilst girls frequently chose "single-role play" such as riding bicycles, where all the participants do the same thing (ibid.). Boys therefore learn to compete with one another, to lead and follow.

Gilligan (1982) suggests that this could explain why men view relationships with other people, especially males, in terms of hierarchy. She proposes that women regard relationships in terms of a web, with family, social and emotional ties linking many people into one large network (ibid.). Gilligan (ibid.) found that women cast themselves as actors in a web of attachments, affiliations,

obligations, and responsibilities to others. Therefore, women seem to have a higher need for affiliation. So if women perceive others as colleagues or as partners in a common cause, this implies a form of equality or sameness. This might explain why females in this study, devoid of competitive sentiments, gave higher ratings to both males and females.

Estimates of Multiple Intelligences of other Race Group Members: Race Effect

A statistically significant result was derived for the race variable in the estimation of multiple intelligences of other race group members. A look at the results indicates that there are clear racial patterns, with Blacks primarily giving low estimates to Whites and Indians and Whites and Indians in turn giving low estimates to Blacks.

Blacks gave lower scores to Indian males in comparison to Whites for verbal, spatial, musical, bodily-kinetic, inter-personal and intra-personal intelligences. Black participants also gave lower scores to Indian females in comparison to Whites and Indians, for overall, verbal, logical-mathematical, spatial, musical, bodily-kinetic, inter-personal, and intra-personal intelligences. Blacks gave low estimates to White males for musical, bodily-kinetic and inter-personal intelligences. Blacks yet again gave low estimates to White females for overall, verbal, musical and bodily-kinetic intelligences. Whites and Indians gave Black males low estimates for overall and verbal intelligences. Indians gave Blacks males the lowest estimates for logical-mathematical intelligence. Whites and Indians gave Black females low estimates for overall intelligence. Indians gave Black females low estimates for logical-mathematical, spatial, musical and inter-personal intelligences. However, both Indians and Blacks gave low estimates to White females for inter-personal intelligences.

Previous studies looking at the relationship between race and multiple intelligences have focussed on self-estimations of multiple intelligences of one race group in comparison with the self-estimations of multiple intelligences of another race group (e.g. Furnham & Baguma, 1999). Other studies have looked at how individuals from different race groups/cultures rate themselves, their parents, children and siblings (Furnham *et al.*, 2001; Furnham & Mkhize, 2003). Furnham, Callahan and Akande's (2004) study focussed on the comparisons of Blacks and White South Africans' estimates. Other than this study, there are hardly other studies that have focussed on inter-group estimates of multiple intelligences of Whites, Blacks and Indians in a South African setting.

This study is unique, in that it focussed on how Black, Indian and White South African university students rated themselves and students from other race groups in the multiple intelligences. As mentioned above, one of the salient findings in this study was the low means given to Blacks by Whites and Indians, and also the low means that Blacks in turn gave to Indians and Whites.

Race and Stereotypes of Intelligence: White and Indian Factor Explained

Whites and Indians gave Blacks low estimates for the multiple intelligences. This could be as a result of racialized perceptions of intelligence and/or existing racial tensions arising from race conscious policies such as the affirmative action policies.

This study was conducted in post-apartheid South Africa. It is recognized that South Africa is one of the few countries in the world where racism was both *de facto* and *de jure* (Ballard, 2002). Pre-1994, policies under the apartheid system were tailored along racialized classifications. These classifications had Whites at the top of the rank, followed by Indians, Coloureds and Blacks. This meant that Whites were the most favoured by the policies whilst Blacks were the least favoured. For example, the Bantu Laws Amendment Act of 1964, the Bantu Labour Act of 1964, and the Bantu Labour Regulations of 1965 and 1968 stated that no Black person could leave the areas reserved for Blacks unless he/she obtained a contract of employment through a government labour bureau, and no such contract may be valid for more than a year, even though it may be renewed (Johnstone, 1970). In addition, such laws effaced the rights of Blacks to stay in 'white' areas because of certain qualifications such as birth, long residence or continuous employment in them (ibid.).

The observation is that, the apartheid context was exemplified by racial tensions and also shaped and reshaped the categories into which all identities are categorized. This was a system that invariably supported stereotypical notions of race that also culminated in oppressive social relations in South Africa (Stevens, 2003). A vital cornerstone of the ideology that fuelled apartheid was the ideology of intelligence. As far back as the 1920s, South African researchers were convinced of the intellectual inferiority of Blacks (Foster, 1993). Individuals such as Hendrik Verwoed, the grand architect of apartheid, felt that Blacks were of inferior intelligence hence there was no need to give them good education as they would have no use for it (Parsons, 1982). The symbiotic effect of the two ideologies, one that held Whites as intellectually superior and another

that held races as too different to interact, precipitated a context ripe for the exploitation and marginalization of Blacks.

It is argued by some that this type of system nurtured a racist culture (Goldberg, 1993). Culture here is understood as a pattern of basic assumptions that a group has learned in context and deems as the proper way to perceive, think, and feel in relation to that context (Schein, 1992). In South African terms, racist culture was/is marked by exclusions/judgements prompted or promoted by racial reference or racialized significance. Goldberg (1993) argues that in post-apartheid South Africa, inter-group relations are presupposed on group categories definitive of formal apartheid. As such, these group categories remain informally constitutive of social relations in South Africa today (ibid.).

The author is not advocating the point that the participants in this study are racists. The suggestion here is that the White and Indian participants on the one hand, and the Blacks participants on the other, might have been motivated to rate each other based on the meanings attached to the racial categories of the participant subjects. These meanings might have invariably been informed on the one hand by the stereotypical constructions of race (for Blacks) and on the other hand by the negative roles appropriated during apartheid (for Whites and Indians). The apartheid system employed pre-existing stereotypical images of Blacks that are well known, primarily the notion that Blacks were inferior to other races in intellectual abilities.

The intellectual ability of Black people has been questioned for quite sometime now. Some studies looking at Black intellectual ability have indicated that Black people have a lower IQ in comparison to White people (Peoples, Fagan, & Drotar, 1995; Herrnstein & Murray, 1994; Jensen, 1985, 1998; Rushton, 1995, 2002; Rushton & Jensen, 2005). It has been postulated that such scientific knowledge (explicit theories) can function as a superaddressee (Mkhize, 2004), in that, we can appeal to psychological knowledge to justify our actions (ibid.), or our actions might be influenced by various forms of scientific knowledge. For instance, the architects of apartheid used bigoted empirical studies that suggested that Blacks were intellectually inferior as a rationalization for keeping Black education inferior (Parsons, 1982). In this study, suggested scientific differences between White, Blacks and Indian races may have informed the low multiple intelligences ratings that Blacks received from both Indians and Whites.

Furthermore, it can be argued that the explicit theories presented by bigoted researchers on intelligence may influence social representations of intelligence. In their book titled *Social representations of intelligence*, Mugny and Carugati (1989) state that, "Social representations are just processes by which individuals symbolically construct reality, cognitive formulations which are marked by particular collective integrations" (p. 25). They are the organising principles behind the mental reconstruction of varied social experiences (ibid.). Moscovici (1981) postulated that everyday events are interpreted on the basis of what the individual, or the group, already have in the way of pre-constructs, as an anchoring process.

In that vein, social representations are rendered meaningful by means of images, concepts and language-use common to the group (Mugny & Carugati, 1989). This is what Bourdieu (1972) has termed as the *habitus*. This is "a set of historical relations deposited within individual bodies in the form of mental and corporeal schemata of perception, appreciation and action" (Margolis, 1998, p. 69). It is argued that our bodies are relatively fully socialized and as such exude embodied knowledge (ibid.). This refers to the learnings and knowledges 'placed' within our bodies by virtue of our location in time and space (ibid.). *Habitus* refers to that aspect of cultural learning that is deeply 'carved' within our bodies that it generates a sense of existence that describes a practical rather than a purely theoretical kind of knowledge (ibid.). As such, the colour of a particular body may derive meaning from a set of historical relations that have 'deposited' those particular meanings on that body.

The social representations of intelligence during apartheid were based on stereotypical perceptions of particular race group members. If we concur with Goldberg (1993) that in post-apartheid South Africa, inter-group relations are presupposed on group categories definitive of formal apartheid, then it may follow that such social representations are still informally in existence today in post-apartheid South Africa. Accordingly, White and Indian subjects might have given low ratings to Blacks due to mental perceptions informed by a context that is still tainted by past prejudiced racial classifications.

However, there could be other reasons as to why White university students gave low means to their Blacks counterparts. It could be argued that Whites and Indians gave low means to Blacks due to persisting tensions that may be fuelled by current policies that render these race groups (Whites and Indians) economically disadvantaged (Wambugu, 2005). It has been postulated that existing tensions in post-apartheid South Africa between Blacks and members of other race groups might

be fuelled by current affirmative action policies that primarily favour Blacks (Wambugu, 2005). Indians, although classified as a 'previously marginalized' group, find themselves frequently overlooked in favour of Blacks. Tension is informed by perceptions of a lack of fairness and justice in the affirmative action policies. Non-beneficiaries of these policies feel that jobs should be offered premised on criteria such as experience and merit (ibid.). Based on this, Blacks are regarded as undeserving since they supposedly lack these criteria (ibid.).

In a study conducted on White university students, it was found that in their resentment towards Blacks for the advantage they occupy by virtue of the affirmative action policies, Whites engaged in 'Othering' discourses depicting the beneficiaries of these policies as intrinsically deficient (Wambugu, 2005). Blacks were cast as lacking the 'ability' to execute the work. For example, this is what some participants in the study had to say:

My Dad works in the harbour at X, and...there was...a position that opened up for manager of the harbour...and my Dad knows people who had applied that had studied for eight years, like highly qualified people...this black guy came from a farm...it was the first time he had walked into the harbour. He came from the farm, asked for 6,000 rands... and they gave him the job (ibid., p. 6).

Like in affirmative action they are not choosing the right person for the job, they're choosing the black person for the job... then that person's running business...then it's obviously gonna deteriorate (ibid., p. 63, emphasis added).

In essence, the intellectual competence of Blacks, or rather the lack of it, was regarded as a factor that precluded the targeting of such a population in job creation policies (ibid). Yet again, the intellectual ability of Blacks was brought into question. Crucially though, Wambugu's study showed that there still is racial tension among the South African youth fuelled *inter alia* by affirmative action policies. This tension, it can be argued, when understood behind a background of a racist culture that feeds off particular social representations of intelligence, may influence lay perceptions of multiple intelligences and variations therein. This might be another reason why Whites and Indians gave Blacks low ratings.

Race and Stereotypes of Intelligence: Black Factor Explained

Blacks gave Whites and Indians low estimates for the multiple intelligences. A sense of 'retribution' against 'previously privileged' racial groups might have motivated Blacks to give low ratings to both Whites and Indians; an act of deconstructing any existent stereotypes of especially, the intellectual superiority of Whites.

Post-apartheid South Africa is still a racialized society. It carries with it the baggage of past injustices and atrocities meted out during apartheid. Apartheid was vicious and the vast majority of the people were excluded from power, rights and resources on the basis of their racial classification. Blacks were exclusively marginalized from most socio-economic spheres for many generations before their emancipation in 1994. Just as it is argued that the White South African debunks everything accomplished under hard conditions since the 1994 democratic transformation, the average Black South African will often not recognize any positive development during the dreaded apartheid era (Moodley & Adam, 2000). This is not astonishing taking into considerations the high costs incurred for the few positive achievements, which are easily tainted by the context in which they occurred (ibid.).

In post-apartheid South Africa, Roefs (2006) found that the youth tend to be the most negative about improvement in race relations. Just a small majority (54%) of Black people between 16 and 24 years thought that race relations had improved over the past decade (ibid.), suggesting that a majority of Black youth may still harbour negative perceptions about Whites.

Accordingly, in a post-apartheid context Blacks could still be harbouring resentment towards Whites for the role they played in the apartheid history of South Africa (TRC, 1998). Indians may be regarded as co-conspirators in that history due to the favourable conditions they enjoyed in relation to Blacks. This may explain why Blacks consistently gave both Whites and Indians low ratings in the estimation of multiple intelligences.

The results witnessed in this study are the lay perceptions of university students who have a mean age of 22 years. Thus, they most probably did not bear the brunt of apartheid and were coming of age during the transition to a democratically elected Black government. This factor alone, some might argue, would negate any pretension of 'racist' tendencies exhibited by the participants in this study. However, socialization that occurs in a racist culture is bound to lead to certain

constructions about people from other races. Therefore, one can posit that the apartheid legacy has left behind remnants of a racist culture that possibly still dictates current everyday perceptions of intelligence. Moodley and Adam (2000) assert that the legacy of apartheid racism still lives on and that South Africa is still a deeply divided society in which racialized competition is likely to increase. The results highlighted in this section can be understood behind a background of racist culture, as the racialized expressions of university youth indicating ascribed social identities predicated on racialized group membership.

Best Predictors of Overall Intelligence

As far as the analysis of the self-estimates of intelligence were concerned, verbal, bodily-kinetic and musical intelligences respectively, emerged as the best predictors of overall intelligence for the Black sample. The analysis of the self-estimates of intelligence showed that the best predictors of overall intelligence for the Indian sample were verbal and spatial intelligences respectively. The analysis of the self-estimates of intelligence also showed that the best predictors of overall intelligence for the White sample were verbal, logical-mathematical and bodily-kinetic intelligences respectively.

For the Indian males, the best predictors of overall intelligence as estimated by the three race groups were logical-mathematical, verbal, and bodily-kinetic intelligences respectively. The best predictors of overall intelligence for the Indian females, as estimated by the three race groups were logical-mathematical, verbal, musical and intrapersonal intelligences respectively. For the Black males, the best predictors of overall intelligence as estimated by the three race groups were verbal, intrapersonal, spatial, musical, and logical-mathematical intelligences respectively. The best predictors of overall intelligence for the Black females, as estimated by the three race groups were logical-mathematical, interpersonal, and spatial intelligences respectively. For the White males, the best predictors of overall intelligence as estimated by the three race groups were logical-mathematical, intrapersonal, spatial, and interpersonal intelligences respectively. The best predictors of overall intelligence for the White females, as estimated by the three race groups, were spatial, verbal, musical and intrapersonal intelligences respectively.

Best Predictors of Overall Intelligence: Self

Black Students

An analysis of the best predictors of overall intelligence for Black students yielded verbal, bodily-kinetic and musical intelligences respectively as the best predictors. Musical intelligence was however negatively associated with overall intelligence. As such, all the other findings except for the negative association with musical intelligence are consistent with studies that have indicated that the predominant features of conceptions of intelligence in Blacks have a strong social component, despite variation in emphasis on specific qualities (see Dasen, 1984; Putman & Kilbride, 1980; Ruzgis & Grigorenko, 1994; Wober, 1972, 1974). Intelligences that can be argued to possess a social component are inter-personal, intra-personal, bodily-kinetic, musical, and verbal intelligences. These Black university students emanate from a collectivist culture that engenders an emphasis on social aspects of intelligence. It has been postulated that an individualistic culture, such as the one Whites generally are embedded in, emphasises cognitive aspects of intelligence such as logical-mathematical and spatial intelligences (Furnham & Baguma, 1999). However, even verbal intelligence is emphasised in this culture.

However, musical intelligence which has some social elements, was negatively associated with intelligence suggesting that it is not regarded as key, and could even be argued in that vein to be detrimental, to overall intelligence. This is contrary to lay beliefs of the primacy of musical intelligence in African cultures. It is difficult to speculate at this stage why the Black students in this study showed an aversion to musical intelligence. Nevertheless, it can be argued that this shows an implicit consistency with previous research, whereby musical intelligence has not been regarded as one of the key components of intelligence.

The best predictors of Black students' overall intelligence generally point to perceptions of what are perceived to be the key aspects of intelligence for Blacks, which concur with previous research (see Dasen, 1984; Putman & Kilbride, 1980; Ruzgis & Grigorenko, 1994; Wober, 1972, 1974). Nevertheless, previous explanations of this phenomenon have centred on the evolutionary ecological aspect of these intelligences as justifications for their emphasis in most collectivist cultures. With the current urbanization and globalization of society there is need for new alternative understandings of why certain intelligences are emphasized, for as it shall be seen in the

rest of the study, social aspects of intelligence, such as bodily-kinetic and verbal intelligences, are also regarded as central to White students' intelligence.

Indian Students

An analysis of the best predictors of overall intelligence for Indian students indicated that verbal and spatial intelligences respectively were the best predictors. Historically, Indians emanate from a collectivist culture and as such one would expect their results to be similar to those of Blacks by being more inclusive of other intelligences with social components. Nonetheless, Indians are expected as per literature on collectivist cultures to also place emphasis on verbal and spatial intelligences (for example the Puluwatas navigation of the sea, see Gardner *et al.*, 1996). It can be postulated that the results of Indian students in this study are consistent with what was hypothesized of collectivist cultures. Nonetheless, it has to be noted that Indian cultures may be subject to change as well in this day and age of urbanization that is infused with capitalist ideologies.

White Students

An analysis of the best predictors of overall intelligence for White students indicated that verbal, logical-mathematical and bodily-kinetic intelligences respectively were the best predictors. This result is consistent with literature that indicates that lay people from individualistic cultures associate intelligence with academic behaviour such as problem-solving and verbal abilities (see Dasen, 1984; Keats, 2000; Putman & Kilbride, 1980; Ruzgis & Grigorenko, 1994; Yang & Sternberg, 1997a, b). Logical-mathematical intelligence featured only in this group as a key component of overall intelligence, showing a consistency with previous research that has shown the emphasis of logical-mathematical intelligence in Whites (see Dasen, 1984; Keats, 2000; Putman & Kilbride, 1980; Ruzgis & Grigorenko, 1994; Yang & Sternberg, 1997a, b).

In sum, in this study the ratings for the best predictors of overall intelligence were consistent with previous studies, showing collectivist and individualistic leanings. Verbal intelligence was yet again emphasized for all three race groups. This it can be argued is understandable as the ability to communicate is crucial in the facilitation of social interaction and transmission of culture. Consequently, verbal ability is of importance to any human culture as it is *sine qua non* in the evolution of culture itself.

Best Predictors of Overall Intelligence: Indian Males by the Three Race Groups

An analysis of the best predictors of overall intelligence for the Indian male as predicted by the three race groups showed that logical-mathematical, verbal, and bodily-kinetic intelligences respectively were the best predictors. Indian male intelligence is regarded as being made up of three key elements, with priority being placed on logical-mathematical intelligence. This may be understood behind a background of modern society, in which problem solving abilities are viewed as essential for survival in a capitalist economy (Buzan, 2002). In modern day society, verbal intelligence is also important since the ability to communicate effectively with others and relay one's point clearly is considered essential in the contemporary business world (ibid.). It might be suggested that logical-mathematical intelligence is emphasized due to the career-driven nature of middle-class Indians, which requires good problem solving abilities. Further studies looking into the career inspirations of Indian students are required to confirm this trend.

Best Predictors of Overall Intelligence: Indian Females by the Three Race Groups

An analysis of the best predictors of overall intelligence for the Indian female as predicted by the three race groups showed that logical-mathematical, verbal, musical and intrapersonal intelligences respectively were the best predictors. The overall intelligence of the Indian female intelligence was perceived as comprising of four intelligences namely logical-mathematical, verbal, musical and intrapersonal intelligences. Yet again, as was the case with the Indian males, logical-mathematical and verbal intelligences have primacy. It can be postulated that this may be a consequence of the same reasons alluded to the Indian males above.

Best Predictors of Overall Intelligence: Black Males by the Three Race Groups

An analysis of the best predictors of overall intelligence for the Black male as predicted by the three race groups showed that verbal, intrapersonal, spatial, musical, and logical-mathematical intelligences respectively were the best predictors. In their self-estimates of predictors of overall intelligence, Blacks included both verbal and musical intelligences. Looking at the results from the three race groups, it seems that the overall intelligence of Black males is seen to be much broader comprising of five intelligences. Thus, the Black male may be perceived as diversified in his intellectual capacities and abilities.

Best Predictors of Overall Intelligence: Black Females by the Three Race Groups

An analysis of the best predictors of overall intelligence for the Black female as predicted by the three race groups showed that logical-mathematical, interpersonal, and spatial intelligences respectively were the best predictors. These are contrary to the predictors highlighted by Blacks for their overall intelligence, which were verbal, bodily-kinetic and musical intelligences. From the results, although the Black female is perceived to have a narrower set of intelligences in comparison to her Black male counterpart, she is seen as more inclined to problem solving abilities. Nonetheless, this is interesting since Blacks did not highlight the three predictors alluded to the Black female in their estimations.

Best Predictors of Overall Intelligence: White Males by the Three Race Groups

An analysis of the best predictors of overall intelligence for the White male as predicted by the three race groups showed that logical-mathematical, intrapersonal, spatial, and interpersonal intelligences respectively were the best predictors. Logical-mathematical intelligence was the only intelligence highlighted in both the White male students' self-estimates and those from the three race groups. Nonetheless, the primacy of logical-mathematical intelligence is concurrent with expectations of individuals from individualistic cultures. However, the inclusion of intra-personal and inter-personal intelligences is an indication that social components of intelligence are regarded as being important to White individuals as well.

Best Predictors of Overall Intelligence: White Females by the Three Race Groups

An analysis of the best predictors of overall intelligence for the White female as predicted by the three race groups showed that spatial, verbal, musical and intrapersonal intelligences respectively were the best predictors. Verbal intelligence was the only intelligence highlighted in both the White female students' self-estimates and those from the three race groups. All the same, other than verbal intelligence the White female was not perceived as expected, bearing in mind that she emanates from an individualistic culture. The intelligences highlighted by the three race groups for the White female are usually reserved for individuals from collectivist cultures. Therefore, it could be that in contemporary society the White female is widely regarded as possessing intelligences that espouse social components of intelligence.

Conclusion

Although a majority of the studies on lay perceptions of multiple intelligences have indicated a gender effect in the self-estimates of intelligence, none was found in this study. This might suggest a perception of parity between the genders. In other studies, females have had a tendency to underestimate their intelligence, whilst males have over-estimated their intelligence. The absence of this observation in this study might be a consequence of current social policies advocating gender equity, which in turn might have played a role in sensitising university females about their intellectual competence, in addition to sensitising most students on sex-role stereotyping over these issues.

The race effect observed in the self-estimates of multiple intelligences indicated that White students gave themselves higher estimates as opposed to Black and Indian students in the intelligences found to be significant. A similar finding was observed by Furnham, Callahan and Akande (2004) in their study that focused on self-estimates of Black, Indian and White students in South Africa. White students perceive themselves to have higher IQs, whereas Blacks and Indians comparatively gave themselves relatively lower scores. This may be a consequence of the racialized socialization that a majority of Whites experience, which seems to underscore their intellectual dominance.

The gender effect in the estimates of multiple intelligences by the three race groups indicated that females gave higher estimates to other race group members than males did. As it has been argued, this could be as a result of the fact that females perceive more homogeneity than males do as witnessed in their relationship styles (Gilligan, 1982) or as evidenced in the different modes of play exercised by boys and girls (Lever, 1988).

The race effect in the estimates of multiple intelligences by the three race groups indicated that Black students gave low estimates to White and Indian students and in turn, White and Indian students gave Black students low estimates. It has been argued that they may have been motivated to rate each other this way due to the meanings attached to the racial categories of students from other race groups. These meanings may have invariably been fostered on the one hand by the stereotypical constructions of race (for Blacks) and on the other hand by the negative roles appropriated during apartheid (for Whites and Indians).

Findings for the best predictors of intelligence showed that for the self-estimates, verbal intelligence and also the ability to rotate or conjure abstract images or move the body in space (bodily-kinetic and spatial intelligences) seem to be vital to what is regarded as the cornerstones of overall intelligence by members from the three race groups. This was the case with Blacks (verbal and bodily-kinetic intelligences), Indians (verbal and spatial intelligences) and Whites (verbal and bodily-kinetic intelligences) who highlighted these intelligences. It has been proposed that this feature could be an artefact of the demands of contemporary society. Modern day psychologists have observed a direct correlation between vocabulary and life-success (Buzan, 2002). It is argued that people who are linguistically adept have the ability to persuade, inspire, mesmerize, and influence — in all manner of ways — the thinking of others. It is not astounding, then, that words and their power have become one of the most significant currencies in the Knowledge Revolution of the 21st century (Sperber, 1994). In addition, in a modern society that places a high premium on cognitive abstraction, spatial intelligence then becomes vital. At this stage however, it is difficult to state why bodily-kinetic intelligence was emphasized by some of the students.

Finally, findings for the best predictors of intelligence as estimated by the three race groups show that the overall intelligence of the Black male student (five intelligences) is regarded to be broader than of others, followed by that of the White male student, White female student and Indian female student (four intelligences). The Black female student's intelligence was restricted to three intelligences. As such, the Black male student was seen as having the most diversified intelligence and the Black female student as having the least diversified intelligence.

Looking at the intelligences that were given primacy as the key predictors of overall intelligence for members from the three race groups, one still sees that intelligences that are associated with problem solving and verbal abilities dominate, except for the White female students. This was the case with the Indian male student (logical-mathematical intelligence), the Indian female student (logical-mathematical intelligence), the Black male student (verbal), the Black female student (logical-mathematical intelligence) and the White male student (logical-mathematical intelligence). For the White female student it was spatial intelligence. Yet again, there seems to be a push for intelligences that are deemed necessary in this modern day capitalist society. As such, there is a need to look at the dynamics behind the 'new emphasis' of particular intelligences across cultures as the previous evolutionary ecological explanations may not be applicable.

CHAPTER 6

CONCLUSION

This study aimed at investigating the lay (implicit) theories of intelligence of young White, Black and Indian South Africans in a university setting. It was motivated by the fact that people's everyday judgments of each other's intelligence always have been and continue to be strongly guided by their implicit theories of intelligence than by their explicit theories (Sternberg, 1985b). The main variables of interest were culture/race and gender.

Previous studies on implicit theories of intelligence have indicated that males tend to rate themselves higher for spatial and logical-mathematical intelligences as opposed to females who rate themselves lower. This it has been suggested might be premised on the male normative intelligence of logical-mathematical and spatial intelligence that people believe is at the heart of real intelligence (Furnham, 1999). Society has primarily been patriarchal. Accordingly, most of its views have been tailored by males and most importantly about the male. Consequently, what is seen as intelligence in the wider society is thought to be primarily possessed by the male.

Furnham, Callahan and Akande's (2004) study showed that White South Africans gave themselves higher estimates for logical-mathematical, interpersonal, and intrapersonal intelligences as opposed to their Black counterparts.

Conclusions about the Research Questions

Results from this study indicated that males and females did not differ in the self-estimates of multiple intelligences. It was argued that this could be an indication of a reduction in gender stereotypes among South African university students.

This study found that Whites gave themselves higher self-estimates than their Black and Indian counterparts did for overall, verbal and spatial intelligences. It was postulated that this phenomenon might be a consequence of the kind of socialization that White students may have had that emphasized a perception of intellectual dominance.

Results from this study showed that males and females differed in how they rated the intelligences of people from other race groups. Females gave higher estimates to other race group members than males did. It was argued that females gave higher means since they perceived homogeneity in abilities as opposed to males who perceived heterogeneity in abilities. This was premised on some studies that have suggested that women perceive others as colleagues or as partners in a common cause, which implies a form of equality or sameness.

It was found in this study that Black, Indian and White South Africans differed in how they rated the intelligences of people from other race groups. Blacks gave low estimates to Whites and Indians and Whites and Indians in turn gave low estimates to Blacks. It was argued that this phenomenon might be informed by historical, stereotypical constructions of race (determining how Whites and Indians rated Blacks) and also by the negative roles appropriated during apartheid (influencing how Blacks rated both Whites and Indians). Post-apartheid South Africa still has an enduring racist culture informed by stereotypical notions of race and intelligence (Goldberg, 1993). In addition, current race-conscious policies might be fuelling negative sentiments against beneficiaries of such policies (Wambugu, 2005). On the other hand, the low ratings of Whites and Indians may have been motivated by retributive feelings in the previously oppressed Blacks.

Implications for Social Relations in Post-apartheid South Africa

The White and Indian students on one hand and the Black students on the other seem to have some tensions that might be fuelled by racial sentiments informed by past or even present circumstances. A study conducted by Roefs (2006) indicated that a majority of Blacks thought that White people were racist and conversely the majority of Whites thought that Blacks were racist. In addition, the majority of people felt that race relations had improved since 1994, however this perception was weaker amongst White and Indian people than amongst Blacks (ibid.). The findings from this study suggest that White and Indian students perceive Black students differently and vice versa. Dweck, Chiu and Hong (1995a) hold that people's implicit theories about human attributes configure the way they understand and respond to human actions and outcomes. Henceforth, it is argued that implicit theories construct the meaning framework in which attributions occur (ibid.). As such, the findings from this study may be suggestive of the nature of race relations that might be expected between White, Black and Indian South Africans.

Implications for Future Research

This study grappled more with the White and the Black tensions seeing that these were the identities most targeted and thus articulated in race, racism and apartheid discourses. In light of this, it has to be stated that there is plenty of literature on White on Black social representations of intelligence, but there is a paucity of literature on Indian on Black social representations of intelligence and vice versa. Consequently, there is a need for more research in this area.

For future research it would interesting to see if current work expectations or the individualistic learning environments most Black and Indian students find themselves located in, influence their perceptions of the best predictors of overall intelligence i.e. Do perceptions of intelligence differ as a function of where people are located on the individualism and collectivism dichotomy (Hwang, Francesco & Kessler, 2003; Moch, 1986; Triandis, 1995; VonDras, 2005)? It would also be interesting to see whether these perceptions of what are the best predictors of overall intelligence vary across urban versus rural youth, for White, Black and Indian race groups. More research is also required to find out how the urban White, Black and Indian youth vary from their rural counterparts in their conceptualizations of intelligence and in their rating of other races in the same. Naidoo and Mahabeer (2006) found that Indian and Black university students in South Africa desire western education and careers, although they still wanted to retain core collectivist values. As such, more research focussing the relationship between perceptions of intelligence and acculturation trends is needed (ibid.). Furthermore, in such an endeavour there needs to be a focus on what intelligence means to Black and Indian people, and this will require qualitative investigations into the nature of intelligence.

Implications for Theory

There is an assumption that intelligence is the same thing in all cultures and subcultures, and that western categories of intellectual functioning represent and exhaust the natural categories of thought. What complicates this further is the fact that although psychologists have been studying intelligence for a long time, they are still not close to a widely acceptable and consistent theory of intelligence (Richele, 1991). As such, there still is a need for more research into the conceptualization of intelligence. We need to research more extensively on what are Black and Indian people's constructions of intelligence, otherwise we run the risk of using constructions that have carried objectionable connotations. The idea of a unitary intelligence and the idea of linear

ranking of people are Western constructions that most cultures do not share (Cohen, 2002). Members of many cultures see diversity and specialized skills without rank, turning temporarily to different individuals for leadership and honour when their skills are called for, without assuming that one person's skills are "best" overall (ibid.).

Gardner's (1983) theory of multiple intelligences highlights the fact that different groups of people value certain intelligences due to the demands of the contexts they find themselves in. For instance, Gardner (ibid.) argues that due to the hunting and gathering nature of the African communities, spatial intelligence became pronounced and extolled in such communities. Other intelligences are acclaimed due to the values, either individualistic or collectivist, embraced by specific communities. Problem-solving ability is not an absolute; it develops with the problem itself. For most of its existence on earth humankind has survived by means of hunting and gathering food. What might have been regarded, during the hunting/gathering phase, as intelligence was determined by problems, which then had to be solved for survival purposes. It would have been very different from what is termed intelligence in today's industrial capitalist society. However, the case is that these environments that Gardner alludes to that might spark the evolutionary nature of specific intelligences are far and between in this day and age. More and more Black children are being born and breed in urban settings. Hunting and gathering sorties are no longer the order of the day and neither is the acquisition of a collectivist stance automatic. This underlines the importance of carrying research on what intelligence is behind a background of a capitalist culture.

Limitations of the Study

The sample in this study was derived from a university setting and as such it cannot be regarded as being representative of the general population. However, it is postulated that it has revealed interesting characteristics of the sample populations.

The study overlooks the fact that the perceptions of individuals may change over time. Extraneous variables such social desirability or mood fluctuations may affect the estimations of intelligence. The estimations provided by the participants might differ according to the positioning in time and space. In that, the contexts in which the data collection occurs may influence the kind of scores the participants give.

Conclusive Comments

This study looked at lay perceptions of intelligence amongst Black, Indian and White South African university students. Results showed that the three race groups hold varying perceptions of the intellectual abilities of other race groups in relation to theirs, suggesting that some racial stereotypes may still be in operation. Females exhibited a perception of homogeneity in intelligences by giving high ratings to males and females alike for the multiple intelligences and also giving higher ratings in general. Finally, one would expect university students to have a higher level of critical understanding of issues such as race and intelligence. In that, racist biological arguments that preach the inferiority of others due to the presence of melanin have long been discredited, we still find students in this study employing stereotypes informed by this line of thought in the understanding of the capabilities of the 'Other'.

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Appendix 1

The Lay Theories of Intelligence

Welcome to “The Lay Theories of Intelligence” a quantitative study that examines lay perceptions of intelligence. Before taking part in this study, I would like to read to you the consent form and if you understand the statements freely consent to participate in the study.

Consent Form

This study involves a look at the self-estimates of intelligence as well as how individuals rate individuals from other race groups. This experiment is designed to understand what people perceive to be intelligence and how they perceive its distribution across race groups. Jacob Ngūnyi Wambūgū of the University of KwaZulu-Natal, Pietermaritzburg Campus, is conducting the study and the Higher Degrees Committee at the School of Psychology has approved it. No deception is involved, and the study involves no more than minimal risk to participants (i.e., the level of risk encountered in daily life).

Participation in the study typically takes at least eight to fifteen minutes and is strictly anonymous. Participants are required to rate themselves and members from other race groups on a number of intelligences namely, verbal, logical-mathematical, spatial, bodily-kinetic, musical, inter-personal, and intra-personal. The ratings given will be determined on a normal distribution scale with ratings ranging from 85 which is considered as ‘low average’ to 130 which is considered as ‘superior intellectual ability’.

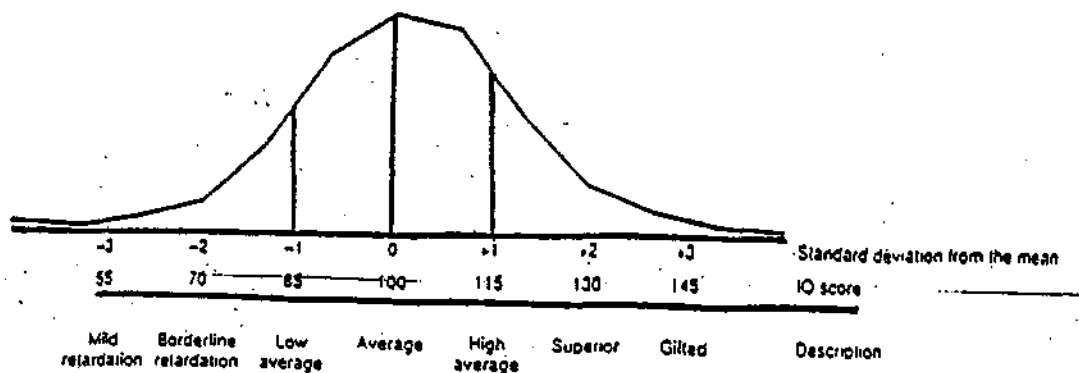
All responses are treated as confidential, and in no case will responses from individual participants be identified. Rather, all data will be pooled and published in aggregate form only. In addition, all the data will be locked in a secure room at the School of Psychology and will only be accessible to the researcher.

Participation is voluntary and individuals have a right of refusal to take part in the study. Participants may withdraw from the study at any time.

If participants have further questions about this study or their rights, or if they wish to lodge a complaint or concern, or if they need an update on the findings, they may contact the principal investigator, Jacob Ngūnyi Wambūgū at 082 86 78 328 or email wambuguj@ukzn.ac.za.

HOW INTELLIGENT ARE YOU?

Intelligence tests attempt to measure intelligence. The average or mean score on these tests is 100. Most of the population (about two-thirds of people) score between 85 and 115. Very bright people score around 130 and scores have been known to go over 145. The following graph shows the typical distribution of scores.



But there are different types of intelligence. We want you to estimate your overall IQ and your score on 7 basic types of intelligence. We then want you to estimate each score for other race groups. Please specify your sex, age and socio-economic status i.e. upper class, upper- middle class or middle class.

ESTIMATE							
	YOU	Indian male	Indian female	Black male	Black Female	White male	White female
OVERALL INTELLIGENCE							
1. Verbal or linguistic intelligence (the ability to use words)							
2. Logical or mathematical intelligence (the ability to reason logically, solve number problems)							
3. Spatial intelligence (the ability to find your way around the environment, and form mental images)							
4. Musical intelligence (the ability to perceive and create pitch and rhythm patterns)							
5. Body-kinetic intelligence (the ability to carry out motor movement e.g. being a surgeon or a dancer)							
6. Interpersonal intelligence (the ability to understand other people)							
7. Intrapersonal intelligence (the ability to understand yourself and develop a sense of your own identity)							

Have you ever taken an intelligence test?
 Do you believe they measure intelligence fairly well?
 Do you believe males are on average more intelligent than females?
 Do you believe intelligence is primarily inherited?
 Do you believe IQ tests are useful in educational settings?
 Do you believe some races are more intelligent than others?

YES	NO
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Please specify details about yourself
 Sex: Male/Female.....
 Socio-economic status.....

Date of Birth.....
 Highest Educational Qualifications.....